Heart Catheterization

Diagnosis and Interventions

A GUIDE FOR PATIENTS AND FAMILIES
Heart Catheterization
Diagnosis and Interventions

This Booklet is designed for patients who are about to undergo Heart Catheterization. It will provide you with what you need to know before you come to the hospital. Our goal is to make you and your family as comfortable as possible and ease your anxiety about your procedure.

Brigham and Women’s Hospital (BWH) is a 755–bed nonprofit teaching affiliate of Harvard Medical School and a founding member of Partners HealthCare System, an integrated health care delivery network. Internationally recognized as a leading academic health care institution, BWH is renowned for the quality of its medical and nursing care. The hospital has performed pioneering work in many areas, including the evaluation of new methods to treat cardiovascular disease and treatments.

For those patients who are connected to the Internet, the Brigham and Women’s hospital website at www.brighamandwomens.org will give you general information on the hospital and directions where to park and how to get to admitting. For those who do not have access to the Internet, all the information you will need is in this booklet.
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**What is a Cardiac Catheterization?**

A Cardiac Catheterization is an x-ray that uses dye to see how the blood flows through the heart veins. X-rays are taken to look for blockages. If a blockage is seen, then a treatment plan is developed with your doctor.

**Why You May Need a Cardiac Catheterization?**

There are a few reasons why you may need a Cardiac Catheterization. You may have had shortness of breath, chest pain, dizziness, or irregular heartbeats. You may have had no symptoms, but your doctor may have detected other signs of heart problems. Some patients may need to check on how well the heart is pumping and how well the valves are opening and closing. Cardiac catheterization is a test that finds these heart problems.

**The Cardiovascular System**

The heart has four chambers that pump blood to all parts of the body. A wall, called a septum, divides the heart into a right and left side. Each side is further divided into an upper chamber called the atrium and a lower chamber called the ventricle.

Valves separate these chambers. The valves are like one-way swinging doors that open and close moving the blood in one direction through the heart. Blood is pumped from the heart through the body bringing oxygen and nutrients to all parts of the body. The blood then returns to the right side of the heart. From there, the blood is pumped to the lungs, where it is receives a fresh supply of oxygen. From the lungs the blood returns to the left side of the heart, where it is pumped out to other parts of your body. This happens thousands of times a day.

At the same time blood is pumped to the coronary arteries. Coronary arteries supply oxygen-rich blood to your heart muscle.
What is Coronary Artery Disease?

Coronary Artery Disease occurs when fat and cholesterol build up on the inside of your coronary arteries. This buildup narrows or completely blocks the inside of the artery. Blood cannot flow freely through the arteries. This may cause chest pain or a heart attack.

For more information on the Cardiac Catheterization Laboratory, as well as other programs and services of the Brigham and Women’s Hospital Cardiovascular Center, view a virtual tour online at http://www.brighamandwomens.org
The Week Before Your Catheterization

It is important to tell your doctor if you are allergic to x-ray contrast dye. Your doctor can give you medication to prevent an allergic reaction like a rash, difficulty breathing, or nausea and vomiting.

Your Doctor Visit Before Your Catheterization

You will need to visit your doctor to have the following done:

✓ A review of your health history
✓ A physical exam
✓ Blood tests
✓ EKG

If you live outside the Boston area, your local doctor can do these tests and send the results to us.

Blood Thinning Medication

It is important to call your doctor or warfarin manager if you are taking blood-thinning medications, such as Coumadin®, Jantoven®, warfarin, or Lovenox®, to tell them you will be having a cardiac catheterization.

Call your doctor or warfarin manager five days before your catheterization, or call us at (617) 525-7339 or (617) 525-9515 for instructions on how to take your blood-thinning medication. Most patients are asked to stop taking warfarin or change to a different medication until their catheterization is complete.

If you take aspirin, keep taking it.
If you take Plavix®, keep taking it.

Patients who take blood-thinning medications will have a blood test done the morning of their catheterization.

Planning Your Travel To and From the Hospital

It is important to have someone drive you to and from the hospital. The medication used to help you relax can make you drowsy. You will not be allowed to drive yourself home or take a cab or bus alone.

CONFIRM YOUR APPOINTMENT

Date: ____________________________

On the business day before your procedure, call the cardiology scheduling office at (617) 732-7226 between 12:00 and 3:00 p.m. to confirm the time you need to arrive at the hospital.
# The Night Before Your Catheterization

## Food and Drink

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<tr>
<th><strong>DO</strong></th>
<th><strong>DON'T</strong></th>
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<tr>
<td>✓ Eat normally before midnight.</td>
<td>Do not eat or drink anything after midnight except a small sip of water with your medications.</td>
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## Medication

<table>
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<th><strong>DO</strong></th>
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<tr>
<td>✓ Take all of your usual medications.</td>
<td>Do not take blood thinning medication like Coumadin®, Jantoven®, or warfarin for 3 days before your procedure. Some patients may be placed on Lovenox® after stopping Coumadin® for 3 days.</td>
</tr>
<tr>
<td>✓ Take a full dose of aspirin, 325mg. total.</td>
<td>Do not stop taking Plavix®.</td>
</tr>
<tr>
<td>✓ Take Plavix® if prescribed.</td>
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## If You Have Diabetes

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<th><strong>DO</strong></th>
<th><strong>DON'T</strong></th>
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<tr>
<td>✓ Take your usual dose of insulin the night before, including Lantus insulin.</td>
<td>If you take diabetes medication by mouth, do not take your diabetes medication the night before or the morning of your procedure.</td>
</tr>
<tr>
<td>✓ If you take morning insulin, take only half of your usual dose.</td>
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<tr>
<td>✓ Our nursing staff will check your blood sugar when you come to the hospital.</td>
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**Arriving at the Hospital**

On the day of your heart catheterization, you will begin by going to the entrance at 75 Francis Street. Go to the information desk, and they will direct you to the admitting office.

From the admitting office you will be escorted to the Shapiro Family Center.

From the Shapiro Family Center the admitting staff will bring you to the cardiovascular recovery room. Your family will be asked to stay in the Shapiro Family Center while the nursing staff prepares you for your procedure.

When you are ready for your procedure, your family will rejoin you in the recovery room until it is time for your catheterization.
In the Cardiovascular Recovery Room

Preparing for Your Catheterization

Changing into a Hospital Gown
Once in the recovery room, you will be asked to use the restroom and change into a hospital gown. All of your clothing will be placed into a hospital bag with your name and medical record number on it. Your clothing bag will be placed in a locked, secure area during your procedure. Please do not wear jewelry and leave all money and credit cards at home or with your family.

Getting your IV
In the recovery room you will have an intravenous (IV) line started in your arm or hand. The IV line will be used to give you fluids and medications before, during, and after your procedure.

Preparing the Arterial Area
An area on your groin or wrist will be shaved and cleaned. Removing the hair lowers the risk of infection. Again, please remember not to wear any jewelry on your arms and hands.

Meeting Your Recovery Room Nurse and Doctor

Reviewing your Medical History
The nursing staff will ask you questions about your medical history.

Signing a Consent for the Procedure
The doctor or a physician assistant will explain the procedure and ask you to sign a consent before the catheterization.

What Happens During Your Catheterization?
A cardiac nurse will be with you during your catheterization. The nurse will meet you in the recovery room before the procedure and will answer any questions you may have before you go to the procedure room.

Study and Research Opportunity
The doctors at Brigham and Women’s Hospital are members of the faculty of Harvard Medical School. Many participate in research studies of new techniques or treatments for Cardiovascular Disease that are not yet available elsewhere.

A member of the cardiovascular research team may speak with you about opportunities to participate in a research study. Participation in research is completely voluntary. Your care will not be affected in any way whether or not you decide to be part of a study.
Waiting Areas
During the procedure your family may wait in the Shapiro Family Center, located on the second floor next to the information desk. It is a comfortable waiting place with educational resources, internet access, relaxing spaces, and waiting area.

The Bretholtz Center is located in the main lobby of Brigham and Women’s Hospital. At the Bretholtz Center you will find Patient/Family Relations services and the Kessler Health Education Library. The Kessler Library offers:

- Computer workstations with internet access
- Laptop and phone jacks
- Health information
  - Books
  - eBooks
  - Brochures and pamphlets
  - Journals, newspapers, and magazines
  - Health education videos
  - CD-ROM collection
  - Foreign languages
  - Children’s collections
- Resources for people with disabilities
  - Adaptive computer
  - TTY phone
  - Books on tape
  - Braille
  - Books by mail
Meeting the Cardiovascular Team

Along with the doctor and nurse, other important members of the cardiovascular team include:

- A radiology technologist, who assists in moving the x-ray table and equipment
- A cardiovascular technologist, who assists with the monitoring equipment
- A physician assistant or cardiovascular fellow, who is a physician in training and will assist the doctor during your procedure

The Procedure Room

Once you are in the procedure room, you will move onto the x-ray table. You will lie on your back with a pillow under your head.

The procedure room is cold because the equipment must be in a cool area. The nurse will give you heated blankets to keep you warm.

You will be asked to state your name and the name of your procedure. This is required for all medical procedures to keep our patients safe.

Medication

The nurse will give you medication through the IV line in your arm or hand. The medications will help you relax and make you drowsy. You will still be able to talk and follow directions, such as holding your breath.

Preparation for the Catheterization

A member of the cardiovascular team will begin to clean the area with a special soap. You will be asked to keep your hands by your side to help keep the area sterile and to decrease the risk of infection. A large sterile sheet will be placed over you to keep you warm and maintain a sterile area.

The skin will be numbed with a local anesthetic similar to the medicine your dentist uses. Once your skin is numb, you will only feel pressure at the site during the procedure. Let the team know if you have any pain or discomfort.
The Catheterization Procedure

A full heart catheterization is usually complete in about 30 minutes. The catheters used are similar to a large IV catheter. You will not feel pain or the catheter moving once it is in place.

When the catheter is in position, a dye is injected into the catheter to form a picture of your arteries. You may feel some warmth in your neck, arms, legs, and abdomen for a few seconds as the dye is injected.

At this time the doctor and radiology technologist may ask you to hold very still or take a deep breath when the table and camera move to take pictures from different angles.

The x-ray picture of the dye injection creates a map of your heart arteries called an angiogram. At this time the doctor will be able to see blockages in your arteries and will discuss several methods of treatment procedures with you. Sometimes these procedures are done immediately and during the catheterization.

Angioplasty

An angioplasty may be recommended to treat blockages within your arteries. An angioplasty is performed when a very thin wire and a small balloon is passed across the blockage in your artery. The balloon is inflated to push the plaque apart.

While the balloon is inflated, you may feel some cramping pain. This is only temporary and will go away once the balloon is deflated. After the balloon is deflated, the blockages will be smaller allowing blood to flow.

Stenting

Most patients who have an angioplasty also have a metal tube, or stent, placed within the artery to hold it open. These stents remain permanently in the artery after the procedure.

Drug-coated Stents

In the past several years, drug-coated stents have changed how angioplasties are done. Drug-coated stents release medication into the artery to prevent scarring and blockages that can reoccur inside the artery. Patients with drug-coated stents have a better chance of remaining free from chest pain for a longer time and have a 5 percent chance or less of having a repeated stent procedure done.
Other Procedures

Other procedures can help the doctor remove large blockages or blood clots from the artery. With some blockages a special drill may be used to soften the blockages before a balloon or stent is placed. Doctors may also use a camera that takes pictures within the artery called an intravascular ultrasound, or IVUS. The IVUS camera may also take measurements within the artery.

Embolic Protection

Sometimes a patient’s bypass arteries have blockages. The doctors at BWH may use a small filter to keep fragments of the blockages from breaking off inside the artery. A stent can then be placed in the bypass artery.

New Medication

You will be started on a new medication called Plavix® or Clopigrel® following your catheterization to prevent blood clots from forming within the stent. This medication is a mild blood thinner and must be taken for several months. It is important to take this medication every day. Please do not miss or skip a single dose. If you do miss a dose, take your Plavix® as soon as you can and contact your health care manager.

—IMPORTANT—

Do not stop taking your Plavix® or aspirin without talking to your cardiologist first.
AFTER YOUR HEART CATHETERIZATION

Recovery Room or Stay in the Hospital Overnight

After the catheterization you may go home from the recovery room or may be admitted to the hospital overnight. Your doctor will decide what is best for you depending on the outcome of your procedure.

Your family is welcome to stay with you in the recovery room after the procedure. The doctor will meet with your family to discuss the treatment plan developed for you.

After the Catheter is Removed

The catheter will be removed from the artery following the catheterization. This part of the procedure usually is not painful, but it may be uncomfortable and will require you to lie flat on your back for four hours.

The nurses will watch you carefully. They will check your blood pressure and the pulse in your feet and legs often.

If the catheterization was done from an artery in your leg, you must remember not to bend your knee. The head of your bed can be raised to allow you to eat and drink. If you need to go to the bathroom during this time, you will have to use a bedpan or urinal.

When the procedure site is sealed, you will be asked to walk to be sure you do not have any bleeding or swelling. If there are no complications, you will be able to go home.

If the catheterization was done through the wrist or arm, you may not use that arm to eat, drink, or hold anything for several hours.
GOING HOME

Reviewing Your Treatment Plan
You will meet with the staff to review your medications and treatment plan before you leave. It is very important for you and your family to understand these instructions.

Activity
First Night
Do not drive after your catheterization. The night of the catheterization, you should relax and have a quiet evening at home either lying down in bed or reclining in a comfortable chair.

Next Morning
• You may shower.
• Restart your normal daily activities; slowly start to do more each day.
• Do not do any strenuous activity like aerobics, running, or weight lifting until your doctor says it’s OK.

Caring for the Catheter Site
The area where the catheter was inserted may feel and look bruised. There will be a small hole in the skin that feels sore. Once the clear dressing falls off, you can wash this area with soap and water and leave the dressing off. You can cover the small hole with a Band-Aid if that is more comfortable. You will notice a small bump under the skin that may last for several weeks. This is normal and will disappear.

Call 911 or Go to the Closest Emergency Room
For the following danger signs:
• Your bandage becomes soaked with blood
• Trouble breathing
• Chest pain

Call Your Doctor
If you notice any bleeding, swelling, redness, bruising, or pain

Your Doctor: __________________________________________

Your Doctor’s Phone Number: ____________________________

Your Follow-up Appointment Date/Time: ___________________
**Important Phone Numbers**

Questions about the procedure? ........ 617-525-7339  
Shapiro Family Center ................. 857-307-1251  
Cardiovascular Recovery Room ........ 857-307-2060

**Where to Eat**

BWH Café  
Located on the second floor, near the Tower elevator

Coffee Cart  
Located in the 45 Francis Street lobby

Pat’s Place  
Located in the Peter Bent Brigham Building at 15 Francis Street

Au Bon Pain  
Located in the 75 Francis Street lobby

The Natural Foods Café  
Located on the first floor of the Carl J. and Ruth Shapiro Cardiovascular Center

**Parking Options**

Parking in the Longwood Medical Area can be difficult due to heavy traffic. Visitors may park in the Service Center Garage on the corner of Francis Street and Brookline Avenue. The 45 Francis Street entrance offers a patient self-parking garage, which is also open to visitors on weekends, holidays, and after 5 p.m. on weeknights. Patients who choose valet parking will find valet service at all three entrances: 75 Francis Street, 15 Francis Street, and 45 Francis Street.

For more information regarding parking and rates, please call the Parking Office at 617-732-5877.

**Resources**

The Kessler Health Education Library is located in the Bretholtz Center. It is open Monday through Thursday 10 a.m. to 8 p.m., Friday 10 a.m. to 6 p.m., and Saturday 11 a.m. to 3 p.m. Call 617-732-8103 for more information about the library.

The central office for Patient/Family Relations is on the first floor of the Tower in the Bretholtz Center. It is open Monday through Thursday 8:30 a.m. to 8 p.m., Friday 8:30 a.m. to 6 p.m., and Saturday 11 a.m. to 3 p.m. The staff can provide general information about hospital policies, procedures, and services. To speak to a representative by phone, call 617-732-6636.
**Directions**

**From the North:**
Head south on Route 93, then head west on Storrow Drive. Take the Fenway outbound 1-S exit (on the left). At lights, bear right onto Boylston Street. At third set of lights bear left onto Brookline Avenue. At fifth set of lights, turn left onto Francis Street.

**From the West:**
Head east on the Mass. Turnpike. Take Route 128 South for approximately one mile. Take Route 9 East for six miles. Bear left onto Brookline Avenue (Brook House apartments will be on right). At third set of lights, turn right onto Francis Street.

— Or —
Continue east on Massachusetts Turnpike. Take Huntington Avenue/ Copley Square/Prudential Center exit. Take Huntington Avenue west for three miles, take right onto Francis Street at Brigham Circle.

**From the South:**
Head north on Route 3 (Southeast Expressway), take the Mass Ave-Roxbury exit. At the end of the ramp, cross Massachusetts Avenue onto Melnea Cass Boulevard. Take a left onto Tremont Street. Take first right onto Ruggles Street. Turn left onto Huntington Avenue at intersection of Ruggles Street and Huntington Avenue. At the second set of lights (Brigham Circle), turn right onto Francis Street.
Notes: