



A GUIDE FOR CARDIOVASCULAR CATH LAB PATIENTS

CARDIAC CATHETERIZATION

Bring this booklet on the day of your procedure.

DALE MICHELS CENTER FOR HEART CARE

430 E. Division Street, Fond du Lac • Cardiology (920) 926-8230

For additional information, visit agnesian.com/cathlab.

agnesian.com

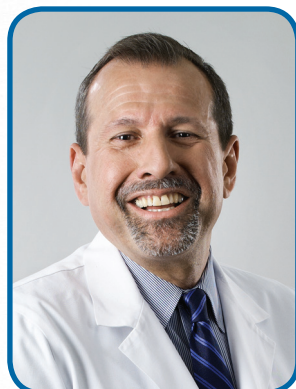
AGNESIAN HEALTHCARE IS SPONSORED BY THE CONGREGATION OF SISTERS OF ST. AGNES

AGNESIAN HEALTHCARE'S DALE MICHELS CENTER FOR HEART CARE

Agnesian HealthCare offers comprehensive heart care services close to home in Fond du Lac. These services, offered through the Dale Michels Center for Heart Care, bring to the region a diverse and complete package of quality cardiac and vascular procedures, including open-heart surgery (coronary artery bypass grafts), coronary angioplasty, stent placements, cardiac catheterizations, peripheral angiograms and other procedures.

For more information, call Cardiology Services at (920) 926-8230.

OUR INTERVENTIONAL CARDIOLOGISTS



Juan Diaz, MD, FACC

University of Illinois
College of Medicine



Richard Santa-Cruz, MD, FACC

University of Miami
School of Medicine

OUR CARDIOTHORACIC SURGEON



R. Eric Lilly, MD

Duke University
School of Medicine

PROCEDURE DETAILS

Your Procedure: _____

Physician: _____

Date: _____ Arrival Time: _____

THE NIGHT BEFORE MY PROCEDURE:

- Do not eat or drink after _____.
- If you take insulin, decrease your nighttime dose by: _____

THE MORNING OF MY PROCEDURE:

- If you take insulin, decrease your morning dose by: _____
- Take all of your morning medications with sips of water **EXCEPT:** _____

- If you take Warfarin (Coumadin), have a contrast dye allergy or have impaired kidney function:

- Shower or bathe the night before or the morning of your procedure.

PLEASE BRING THE FOLLOWING WITH YOU ON THE DAY OF YOUR PROCEDURE:

- **If you use a CPAP at home, bring it with you.**
- You may want to bring a book or electronic device to entertain yourself while you wait for your procedure to start. Your start time may vary due to the length of procedures prior to yours, or if emergencies arise.
- A current list of your medications.
- Bring an overnight bag with home comforts if desired, as you may stay overnight.

Contact the Cardiology department at (920) 926-8230 with questions.

Please arrive on time to check in at hospital registration, located by Café Coffee, just off the hospital lobby. The main entrance is located off Division Street by the stop and go lights.

CORONARY ARTERY DISEASE (CAD)

What is a coronary artery?

Coronary arteries spread out over the surface of your heart to supply it with oxygen-rich blood.

What causes coronary artery disease?

Plaque deposits (fat, cholesterol, calcium and other substances in your blood) can build up on the inside of your coronary arteries. This buildup can narrow or clog the inside of your arteries decreasing the supply of blood and oxygen to your heart.

Common signs and symptoms

- Angina (chest pain) can sometimes be mistaken as heartburn, and can spread to your arms, shoulder, back and jaw
- Shortness of breath or tightness in the chest
- Nausea/vomiting
- Sweating or cool, clammy skin
- Fatigue
- Weakness

Who is at risk?

Some risk factors, like age and family history, are out of our control. Other modifiable risk factors include:

- Smoking
- Diabetes
- High blood pressure
- High cholesterol
- Obesity
- Lack of exercise

How is CAD diagnosed?

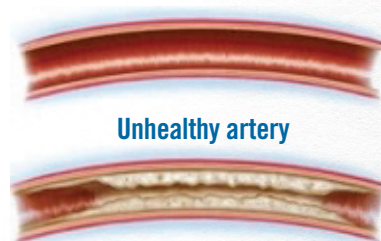
Your healthcare provider will review your current symptoms and previous medical history. If your healthcare provider suspects you have coronary artery disease, additional tests may be ordered, including:

- Blood work
- Chest X-ray
- Echocardiogram (ECHO) - ultrasound of the heart
- Electrocardiogram (EKG) - records electrical activity of the heart
- Stress test - to see how your heart responds to increasing physical activity. This can be done using either medication given to you in an intravenous line (IV) or walking on a treadmill
- Cardiac catheterization

Ways to manage coronary artery disease

- A combination of medical treatment and reducing of risk factors.
- Sometimes these changes alone are not enough and further treatment may be needed. This could include a heart catheterization with angioplasty (ballooning of the coronary arteries), stenting or even open heart surgery.

Healthy artery



Unhealthy artery

CARDIAC CATHETERIZATION

If your healthcare provider suspects you have a blockage in one of your coronary arteries or if you have an abnormal stress test, you may have a cardiac catheterization.

What is a cath lab?

A cath lab is a procedure room within the hospital where specialized X-ray equipment is used to visualize the coronary arteries and the pumping chambers of the heart. (The Cardiovascular Cath Lab is also used for other radiology procedures, as any vessel in the body can be seen).

What is a (left) heart catheterization?

This procedure is performed by an interventional cardiologist, and a team of nurses and technicians to find out if you have disease of the heart muscle, valves or coronary arteries. A tiny hollow tube is inserted into a large vessel in the groin or wrist leading to the heart. This procedure uses X-ray technology called fluoroscopy to obtain real time moving pictures of the blood flow in your arteries. These images can identify the exact location of narrowed or blocked arteries. Blocked or narrowed arteries can be opened with a balloon (angioplasty). To ensure that the blocked artery stays open, a stent is commonly placed in the artery.

- Multiple views of your heart are taken as contrast dye is injected into your bloodstream. It is normal to feel a warm sensation when the dye is injected; this is only temporary. The results of the angiogram will help your physician determine which treatment option is best. If there is a narrowing of the artery that the physician determines needs to be remedied, he will proceed with a balloon and/or stent.

What is a right heart catheterization?

The physician may perform a RIGHT heart catheterization to determine how well your heart is pumping, and to measure the pressures in your heart and lungs. The RIGHT heart catheterization is used to assist in the diagnosis of heart failure, shock, valvular heart disease, such as aortic stenosis or mitral valve stenosis, cardiomyopathy or pulmonary hypertension. The physician will numb a small area in your groin or arm using Lidocaine, and will insert a catheter into a vein through a small puncture. The catheter allows the physician to access your heart and obtain different measurements including lung and heart pressures. When finished, the catheter is removed, pressure will be held at the puncture site and a dressing will be applied.

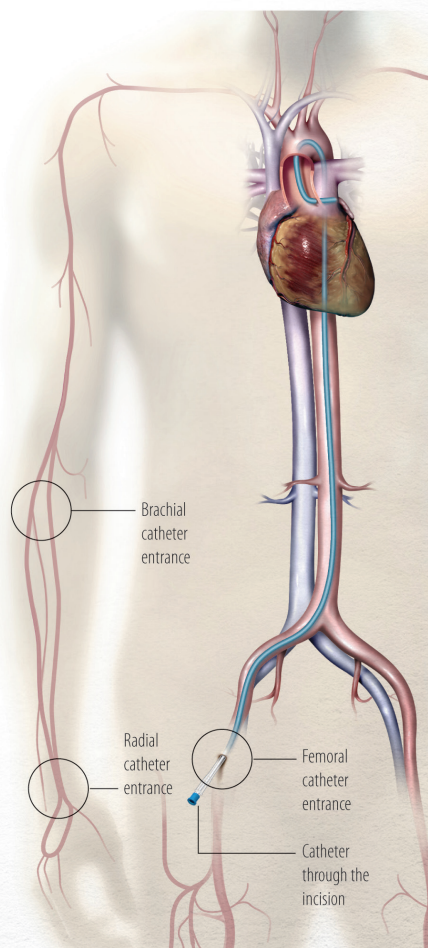


Figure 5. Heart catheterization through the femoral artery

PROCEDURE INFORMATION

What do I need to do before my procedure?

- You will need to arrange transportation to the hospital and later that day or the following day depending on your procedure results. We will not know when you will be discharged until the procedure is completed. Plan to spend the night, just in case.

When you arrive

- You can expect to spend about two hours in one of our pre-procedural rooms. During this time, we may:
 - Sign consent forms
 - Perform physical assessments
 - Update your medical history and medications
 - Obtain blood work
 - Perform diagnostic tests, such as an EKG
 - Start an IV to administer fluids and medications
 - Prep the skin area of your procedure site
 - Give oral medications in pill form prior to your procedure to prevent a contrast dye reaction and to help you relax
- The physician performing your procedure will speak with you. This is a good time for you to ask questions about your procedure and the recovery process.

During your procedure

- The procedure typically takes about an hour. Your loved ones will be taken to our waiting area until the procedure is done.
- You will be brought to the Cardiovascular Cath Lab procedure room where you are expected to lay flat on the X-ray table with the support of a pillow for your head. The procedure room tends to be cool, which is by design, so we will comfort you with a warm blanket.

Cardiovascular Cath Lab associates will then proceed to prep you for the procedure by attaching a heart monitor and other pertinent equipment. You will have oxygen placed in your nose and your procedure site will be washed with an antibacterial cleanser. A sterile covering will drape over you and it will be very important for you to lie still.

- The nurse with you in your procedure will administer conscious sedation through your IV to help you relax and stay comfortable. We will administer sedation while closely monitoring your vital signs for your safety.
- If you begin to experience any discomfort, please let the nurse or physician know so that we can make you comfortable.
- A tiny needle will be used to inject local anesthetic into the skin at the procedure site. You will feel a pinch and a burn from this medication but the area will become numb very quickly.
- A small hollow tube will be inserted. This allows the physician access to the arteries leading to the heart. Through this tube, catheters can be inserted and dye injected. This also allows passage of balloons and stents to the coronary arteries.
- As the X-ray images are taken, the table will move and the lights will turn on and off.
- Once the procedure is complete, the hollow tube will be removed. Either a small plug can be placed in the artery to prevent bleeding or manual pressure will be applied to the site until bleeding stops. A sterile dressing will then be applied.
- The physician will speak to you and your family about your results when the procedure is completed or you are discharged.

CARDIAC CATHETERIZATION (CONTINUED)

After your cardiac cath

- Immediately after your procedure, it will be important for you to lie still and not bend your leg or wrist depending on the procedure site.
- A nurse will frequently monitor your vital signs, procedure site and pulses.
- The results of the procedure and what interventions were done will determine how long you will need to stay. Some patients will stay for up to eight hours or overnight. You will be given discharge information prior to leaving.

Getting your results and what they mean

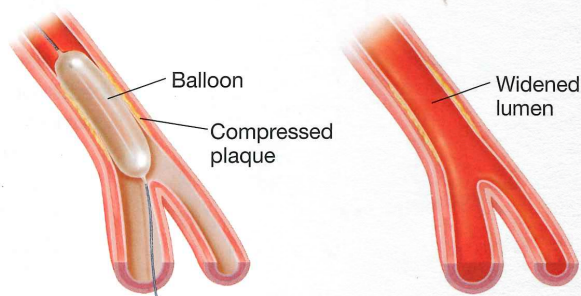
- Sometimes patients are treated strictly with medications.
- If you had balloon angioplasty, a small balloon was inserted through your artery until it reached the blockage in your heart. The balloon was inflated to flatten the plaque against the wall of the coronary artery. This increased the blood flow through the artery.
- If you had a stent placed, this is a tiny mesh tube used to prop open the artery walls. Some stents are coated with medication to prevent the artery from becoming blocked again.
- If you had a coronary stent placed, you will be given a stent identification card. This card identifies who you are as a patient and what type of stent was placed. If you require a magnetic resonance imaging (MRI) scan, tell your healthcare provider or tech that you have a stent implant.
- Medication and treatments, such as balloon angioplasty or coronary stenting alone, may not be sufficient; coronary artery bypass surgery may be recommended.
- Open-heart surgery coronary artery bypass grafting (CABG) may be necessary if the blockage cannot be treated by angioplasty. This involves

taking a vein or artery from another part of the body and attaching it beyond the blockage to re-establish blood flow.

Risks of the procedure

- Bleeding, bruising, infection or pain at the catheter insertion site
- An allergic reaction to the contrast dye
- Artery damage
- Kidney concerns from the contrast dye
- Heart attack or heart arrhythmia
- Stroke and death are extremely rare

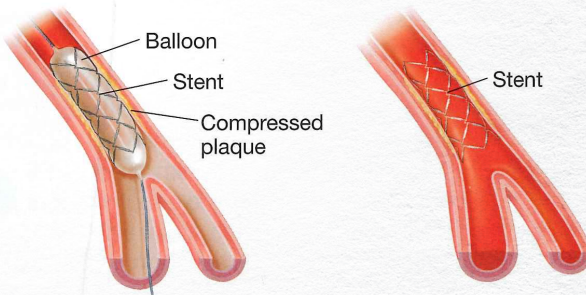
Balloon Angioplasty



Once in place, the balloon is inflated. This flattens the plaque against the artery walls.

The lumen is widened. This improves blood flow.

Stenting



The balloon is inflated to open the stent and flatten plaque.

The stent remains to hold the artery open.

FREQUENTLY-ASKED CARDIOVASCULAR CATH LAB PROCEDURE QUESTIONS

Q. Why can't I eat before my procedure?

We do not want you to have anything to eat or drink before your procedure to make sure that your stomach is empty. This helps to decrease the risk of nausea, vomiting and breathing complications.

Q. Why can't I take my Metformin?

Contrast will be given to you in your arteries during the procedure. Your kidneys get rid of the contrast through your urine, which is how Metformin is excreted as well. By not taking your Metformin, it allows your kidneys to completely excrete the contrast minimizing the risk of damaging your kidneys. This is also why it is important to stay hydrated after your procedure, to flush out the contrast dye from your system.

Q. Why do I need an IV started before the procedure?

An IV is started to administer IV fluids and medications, such as conscious sedation, pain medication and blood thinners.

Q. Why do I have to have my procedural site shaved?

Removing hair just prior to the procedure using a clipper reduces the risk of infection.

Q. Why do I have to arrive 1.5 hours prior to my procedure start time?

You have to arrive early to provide adequate time for your blood work results to be reported and to allow your nurse enough time to complete the pre-procedural assessments, history review and procedural preparation tasks.

Q. Why are the cath lab procedural rooms so cold?

The temperature is kept below a certain level to maintain equipment sterility; this was done by design per regulations. Also so our specialized X-ray equipment doesn't overheat.

Q. How long do stents last and are they removable?

Stents are permanent and cannot be removed. There are no nerve endings inside your arteries so you will not feel your stent. Stents cannot move after being deployed by the physician. Also, the stent will not rust.

Q. Can I walk through metal detectors if I have a stent?

Yes. Stents will not set off metal detectors.

Q. Why do I have to take an anti-platelet medication after receiving a stent?

Anti-platelet medication reduces the risk of your stent becoming clogged because the medication works with the stent's special drug coating.

Q. Can I stop taking my medication if I feel better?

No, you must continue to take your medications as prescribed even if you feel better. If you stop taking your medications, you are at an increased risk of a blood clot forming in or near your stent which may lead to complications.

Q. Why do I need to be on bed rest?

You will be on bed rest from anywhere between three to eight hours after your procedure (unless your catheterization is completed using the radial approach). Bed rest gives the artery puncture adequate time to heal to prevent bleeding complications.

Q. Will I be asleep for the procedure?

Cath lab procedures are performed while you are awake but sedated. A Cardiovascular Cath Lab staff member will start an IV and administer conscious sedation to you once you are in the procedure room. This way of sedation allows you to be comfortable and for your physician to still be able to communicate with you.

If you have any questions prior to your procedure, please call the Cardiology department at (920) 926-8230, or write down your questions for the physician on the last page of this booklet and bring along on day of your procedure.

RESOURCES

Agnesian Pharmacies

Agnesian Pharmacy Main Street
145 N. Main Street, Fond du Lac
(920) 926-4660

Agnesian Pharmacy Markesan
730 N. Margaret Street, Markesan
(920) 398-3261

Agnesian Pharmacy
North Fond du Lac
723 Park Ridge Lane
North Fond du Lac
(920) 926-8660

Agnesian Pharmacy Plus
420 E. Division Street, Fond du Lac
(920) 926-8585

Agnesian Pharmacy Waupun
904 W. Main Street, Waupun
(920) 324-3010

Agnesian Pharmacy West
912 S. Hickory Street, Fond du Lac
(920) 929-7480

Agnesian Prescription Center
Brownsville
900 Main Street, Brownsville
(920) 583-1310

Agnesian Prescription Center
Health Plaza A
421 Camelot Drive, Fond du Lac
(920) 926-5455

Agnesian Prescription Center
Mayville
360 S. Mountin Drive, Mayville
(920) 387-7570

Anticoagulation Management Services

Ripon Medical Center
845 Parkside Street, Ripon
(920) 745-3320

St. Agnes Hospital
430 E. Division Street, Fond du Lac
(920) 926-4580

Waupun Memorial Hospital
620 W. Brown Street, Waupun
(920) 324-8444

Cardiac Rehabilitation

Ripon Medical Center
845 Parkside Street, Ripon
(920) 745-3655

St. Agnes Hospital
430 E. Division Street, Fond du Lac
(920) 926-5041

Waupun Memorial Hospital
620 W. Brown Street, Waupun
(920) 324-6544

Cardiology Clinic

Fond du Lac Regional Clinic
420 E. Division Street, Fond du Lac
(920) 926-8230

Cardiothoracic Surgery

Fond du Lac Regional Clinic
420 E. Division Street, Fond du Lac
(920) 926-8231

Cardiovascular Cath Lab

St. Agnes Hospital
430 E. Division Street, Fond du Lac
(920) 926-5006

Pacemaker Clinic

Fond du Lac Regional Clinic
420 E. Division Street, Fond du Lac
(920) 926-4781

Vascular Services

Fond du Lac Regional Clinic
420 E. Division Street, Fond du Lac
(920) 926-8540

Nurses' Station

St. Agnes Hospital
4 South: (920) 926-5140
5 West: (920) 926-4230
5 South: (920) 926-5150
6 South: (920) 926-5160
Day Surgery: (920) 926-4900
Intensive Care Unit: (920) 926-4730

Creekside Café (St. Agnes Hospital Cafeteria)

Hours of Operation:
Monday through Sunday
6:30 a.m. to 6:30 p.m.

Weekday Grill Hours:
6:30 a.m. to 10 a.m.
11 a.m. to 1:30 p.m.
4:30 p.m. to 6:30 p.m.

Café Coffee (Proudly serving Starbucks)

St. Agnes Hospital
Hours of Operation:
Monday through Thursday
6:30 a.m. to 5:30 p.m. &
Friday 6:30 a.m. to 3:30 p.m.

Closed on Weekends

