



UNIVERSITY OF OTTAWA
HEART INSTITUTE
INSTITUT DE CARDIOLOGIE
DE L'UNIVERSITÉ D'OTTAWA

ELECTROPHYSIOLOGY STUDIES AND STANDARD ABLATION

A Guide for Patients and Families



PLEASE BRING THIS BOOK WITH YOU TO THE HEART INSTITUTE

Patient Name _____

Please complete the following information:

**Contact Person
(relative, friend)** Name _____

 Phone Number (Home) _____

 Phone Number (Cell) _____

Family Doctor Name _____

 Phone Number _____

Pharmacy Name _____

 Phone Number _____

**Cardiac
Electrophysiologist** Name _____

 Phone Number _____

**Cardiologist
(If you have one)** Name _____

 Phone Number _____

IMPORTANT

If you are waiting for your cardiac electrophysiology procedure and you have questions about arrangements or preparations, please contact the Wait List Management Office at 613-761-4436.

If you have already had your procedure and are experiencing any symptoms or concerns, please call your cardiac electrophysiologist.

If you need to speak with someone during off-hours, the Nursing Coordinator can be reached at any time at 613-761-4708.

In case of an emergency, call 911.

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Patient Responsibility Checklist

The following checklist will help you prepare for your admission.

Before Your Admission:

- Fill out the medication list included in this booklet. Bring this with you, plus all of your medications in their original pharmacy containers.

****Important Note****

Before your electrophysiology/ablation procedure, your doctor may either change the dose of your anticoagulation medication, or start you on a new or different anticoagulation medication.

Some of the heart medications you currently take may also be changed or discontinued.

Before changing any of your medications, make sure you fully understand which medications must be changed, and on which specific dates any changes need to be made.

The Evening Before Your Booked Procedure:

- Between 4:00 and 8:00 p.m., expect a phone call from the Day Unit, telling you what time to come to the Heart Institute.
- If you are not contacted by 9:00 p.m., please call the Day Unit at 613-761-4770.

On the Day of Your Admission:

- Take your usual medications with a small amount of water—unless you have been informed otherwise.
- Do not eat or drink anything from midnight onward the night before your procedure, unless you have been told otherwise.**
- Remove all nail polish; do not wear any makeup.

Make Sure You Bring the Following Items with You to the Heart Institute:

- Your health card
- All your medications—in their original pharmacy containers
 - Make sure you tell us about any allergies you have
- The name and phone number of your emergency contact person
- This book. It will be used *after* your procedure for reviewing discharge information.

Leave These Items at Home:

- All of your valuables (including money, jewelry, tablets, laptop computers). The Heart Institute is not responsible for any loss or damage to your personal belongings.

Plan for Your Discharge:

Make transportation arrangements. You cannot drive yourself home. For your first night home from the hospital, arrange for someone to stay overnight with you. If you live a long way from the Heart Institute, check with the Wait List Management Office at 613-761-4436 to see whether you should stay close to the hospital the night of discharge. If so, make advance arrangements for accommodations.

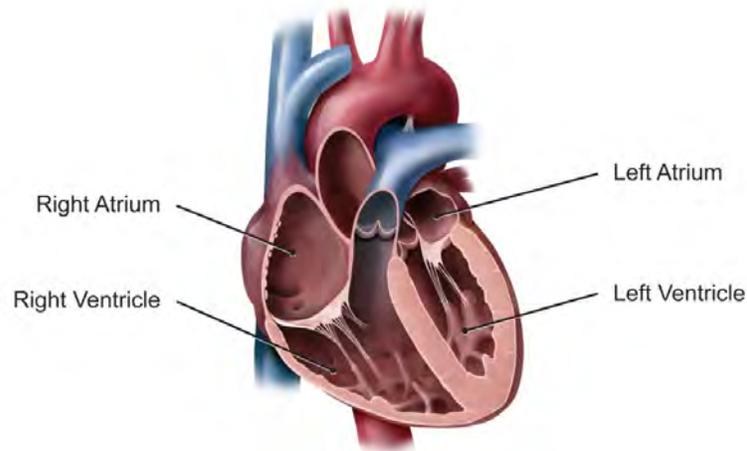
If you are unable to keep the scheduled date for your electrophysiology study or ablation procedure, please notify the Wait List Management Office as soon as possible at 613-761-4436.

Sometimes there are sudden changes in scheduling that may result in your procedure being delayed. If this happens, we will let you know as soon as possible.

Electrophysiologist Contact Numbers			
Dr. David Birnie	613-761-4705	Dr. Martin Green	613-761-4820
Dr. Darryl Davis	613-761-3654	Dr. Girish Nair	613-761-4914
Dr. Robert Lemery	613-761-4978	Dr. Calum Redpath	613-761-3654
Dr. Pablo Nery	613-761-4914	Dr. Mouhannad Sadek	613-737-8135

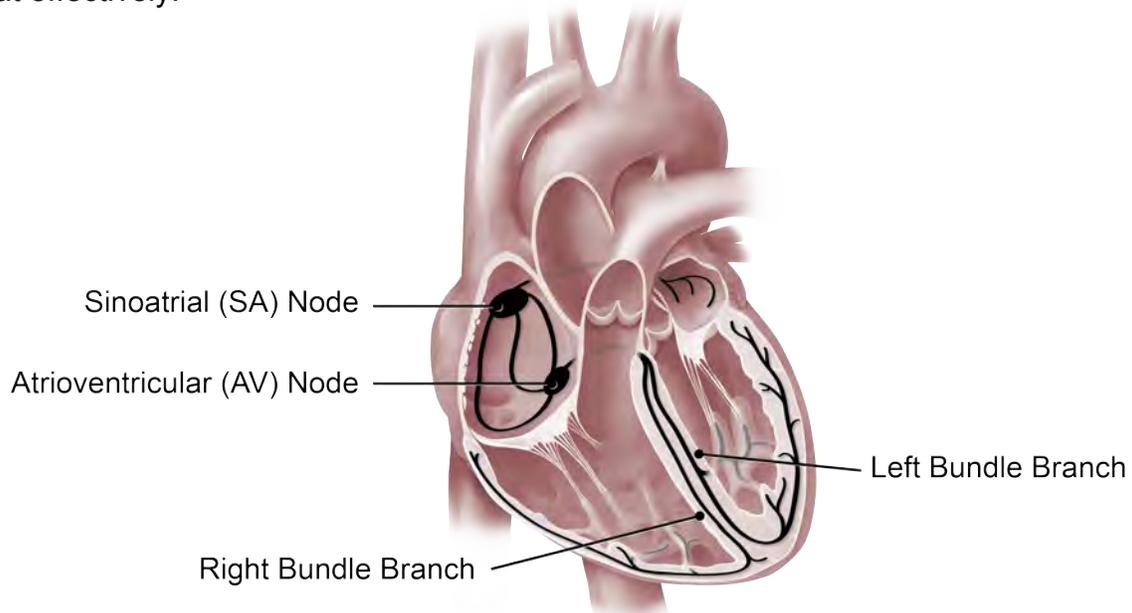
The Heart's Electrical System

Your heart is a muscle that works like a pump. The main job of your heart is to pump blood throughout your body. The heart is divided into a right and left side. Each side has an upper chamber (atrium), which collects blood returning to the heart, and a muscular lower chamber (ventricle), which pumps the blood away from the heart.



The pumping of your heart is regulated by an electrical current or impulse, much like a spark plug in a car. The electrical impulse starts in the sinoatrial (SA) node, often called the body's natural pacemaker, and then spreads throughout both atria, like ripples in a pond. This causes both atria to contract, which squeezes blood into the ventricles.

The impulse then travels down to the atrioventricular (AV) node, which is like a wire that connects it to the ventricles. The AV node splits into two branches, allowing the electrical signal to spread evenly to both ventricles at the same time. This is what causes your heart to beat effectively.



Heart Arrhythmias

Any disruption in the usual electrical pathways in your heart can cause an abnormality in your heart rhythm. This is called an arrhythmia.

Supraventricular Arrhythmias

Abnormal heart rhythms that begin in the upper chambers of the heart are usually rapid. People who experience supraventricular arrhythmias may feel dizzy or light-headed, or have chest tightness or palpitations. Some people do not have any symptoms at all.

Supraventricular arrhythmias can last for only a few seconds or for prolonged periods of time. In general, they are usually not life threatening. However, they can disrupt the regular flow of blood throughout your body and cause you to feel unwell or have other, more serious, symptoms.

Types of Supraventricular Arrhythmias

Atrial Fibrillation

Atrial fibrillation is an irregular heart rhythm that occurs when the SA node does not generate normal electrical impulses. Instead, the atria start to trigger rapid and disorganized electrical signals, causing the atria to quiver rather than contract normally. These abnormal impulses randomly pass through to the ventricles, resulting in an irregular and inefficient heartbeat.

Atrial Flutter

Atrial flutter is similar to atrial fibrillation but less common. In atrial flutter, the electrical impulse that starts in your atria gets disrupted, interrupting its normal flow to the AV node. This creates a circular feedback loop and sets off a series of rapid-fire impulses, causing your heart to beat quite fast for periods of time. Patients with atrial flutter often also have atrial fibrillation.

Supraventricular Tachycardia

Tachycardia is a rapid heart rhythm that occurs when there is a disruption in the normal electrical pathways. There are various types of supraventricular tachycardias.

- **Atrial Tachycardia**

With atrial tachycardia, the electrical impulse starts somewhere in the atria other than the SA node. This causes an abnormally rapid heart rate.

- **AV Node Re-entrant Tachycardia**
AV node re-entrant tachycardia occurs when the electrical impulse gets caught up in extra fibers around the AV node and starts to rapidly circle the AV node. This causes a rapid heart rate.
- **AV Re-entrant Tachycardia (AVRT)/Wolff-Parkinson-White (WPW) Syndrome**
People with AVRT/WPW syndrome were born with an extra electrical pathway in their heart that connects the atria and the ventricles, but completely bypasses the normal AV node pathway. When the electrical impulse goes through the extra pathway, it can cause periods of very rapid heartbeats.

Ventricular Arrhythmias

Ventricular arrhythmias occur in the lower part of the heart and can be a bit more dangerous. During ventricular tachycardia, the heart beats so fast that it cannot properly pump blood to the rest of the body. This can cause extreme dizziness, fainting or sometimes a complete collapse.

Diagnosing and Treating Heart Arrhythmias

Electrophysiology Study/Standard Ablation

In order to fully understand and treat your heart arrhythmia, your doctor has recommended an electrophysiology (EP) study.

An EP study is a specialized procedure that allows your doctor to have a detailed look at the electrical signals in your heart and pinpoint the source of any abnormal rhythms. EP studies use soft catheters with tiny electrodes at their tips to map and evaluate the electrical activity inside your heart. The wires are inserted through veins in your groin or, occasionally, in your neck and threaded up to the inner chambers of your heart.

During the procedure, your doctor records and measures your heart's electrical pathways and may even use tiny electrical pulses to stimulate the arrhythmia so that it can be fully evaluated. Your doctor may also give you different medications through your intravenous (IV) line to see how they affect the arrhythmia.

Standard Catheter Ablation

Catheter ablation is done much the same way as an EP study. In fact, most standard catheter ablations are done immediately after the EP study. It involves threading a thin catheter through the veins in your groin up to the areas inside your heart where the abnormal electrical disruptions are occurring.

The tip of the ablation catheter is directed toward the precise location. Once properly positioned, it delivers a small radio-frequency electrical current to burn out the tiny malfunctioning areas.

Usually, the EP study and ablation procedures are pre-planned to occur at the same time. In other cases, the decision to go forward with ablation is not decided until you have had the EP study and your doctor has determined that an ablation is the best treatment option for you.

Risks of EP Studies/ Standard Ablation

EP studies and standard ablation procedures are considered to be very safe; however, with any invasive procedure, there can be complications.

Rare complications include:

- Excessive bleeding where the catheters were put in
- Bruising or swelling

Very rare complications:

- The heart or lung can be punctured.
- Disruption of the heart's electrical system
- Blood clot inside the vein
- Heart attack or stroke

During the procedure and throughout the recovery period, we will be monitoring you closely.

Standard EP studies or ablations are usually considered day procedures. You will come in on the morning of the procedure and go home at the end of the day. The actual procedure itself may take anywhere from one to four hours to complete.

Before coming in for your procedure, your doctor will discuss any special tests or other preparations that may need to be done.

Conditions Treated with Standard Catheter Ablation

- Typical atrial flutter
- AV re-entrant tachycardia (AVRT)/Wolff-Parkinson-White (WPW) syndrome
- AV node re-entrant tachycardia

On the Day of Your Procedure

On Arrival

If you have your procedure as an outpatient, you will arrive at the Day Unit either from home or by ambulance from a referring hospital. Although your procedure will take anywhere from one to four hours, expect to be at the Heart Institute for a total of eight to 12 hours.

The Day Unit is located on the first floor. Take the elevators from the main lobby at the Heart Institute up to the first floor. Once there, follow the green hearts on the floor to the Day Unit. You will be in the Day Unit until you are ready to go to the EP Lab. Before you go for the procedure, the doctor will come and meet with you in the Day Unit; this will be a good time to ask any final questions you may have.

Only one relative or friend will be allowed to sit with you while you are waiting because space is limited. During your procedure, your relative or friend may wait in the lounge area. When your procedure is completed, the staff will notify your designated contact person. Visiting hours in the Day Unit are from 9:00 a.m. to 9:00 p.m.

Once you are in the Day Unit, the final preparations for your procedure will start. You will change into a hospital gown. Your groin area will be clipped of hair and cleaned. You may have an intravenous tube placed in your arm.

Make sure the nurse knows the name, phone number and location of your designated contact person.

During Your Procedure

Your study will take place in the EP Lab at the Heart Institute. You will be given medication to help you relax, and you may fall asleep. If you continue to feel anxious even after receiving the medication, let the nurse know.

There will be a team of doctors, nurses and lab technologists involved in your procedure. All staff will be wearing gowns and special lead aprons.



The doctor will use a local anesthetic to numb the area around your groin. Once the area is numb, small, thin tubes will be inserted there.

Anywhere from three to five soft catheters will be inserted through the tubes and threaded up into your heart. A small amount of X-ray imaging will be used to help with proper placement of the catheters.

During the insertion process, you may feel some pressure in your groin and some palpitations. Let the staff know if this becomes too uncomfortable.

When the catheters are properly positioned, various recordings and measurements of the electrical activity in your heart will start. This may involve pacing your heartbeat at different speeds, stimulating various types of arrhythmias, or even giving you different medications through your intravenous tube and measuring whether your heart rhythm responds.

All this activity will provide the team with important information about the exact nature and location of your heart arrhythmia and what the best strategy is to treat it. An EP study usually lasts anywhere from 15 to 45 minutes.

Catheter Ablation

Catheter ablation may take an extra one to four hours. During the ablation, an extra-soft catheter is inserted. The tip of the catheter is directed toward the areas in your heart that are firing off the irregular impulses. Once properly positioned, a small radio-frequency (RF) electrical current is delivered to burn out the tiny malfunctioning areas. While this is happening, you may feel a burning sensation in your chest. Let the nurse know if this becomes very uncomfortable. Depending on the type of arrhythmia, the radio-frequency current may need to be applied several times. Atrial flutter usually needs the most RF applications.

Once the ablation is completed, there is further observation and testing to ensure that the arrhythmia has been eliminated. Sometimes the ablation needs to be repeated. When the team is satisfied with the results, the catheters are removed. Once you are ready, you will be brought back to the Day Unit to complete your recovery.

After Your Procedure

You will be on bed rest for up to six hours after your procedure. It is important that you keep your head on a pillow and your affected leg straight. You will be reminded to do these two things to reduce bleeding at the insertion site.

If you notice any swelling or bleeding at the insertion site, it is important you inform your nurse. If you experience any back discomfort, inform the nurse and you can be repositioned with help.

Please note that there may be bruising or discolouration at the insertion site. A certain amount of bruising, stiffness or soreness at the insertion site is expected. A small bruise or lump is normal and will likely go away on its own. You are more likely to experience bruising if you were on a blood thinner before your procedure.

Some numbness or tingling in the affected limb immediately after the test is normal. Such numbness and tingling should disappear by the time you are ready for discharge.

You may eat and drink as you normally would upon return to your unit. Your nurse will assist you as needed.

Discharge and Follow-Up Care

Before you are discharged, your doctor and nurse will go over the procedure and next steps with you. The nurse will tell you how to take care of your insertion site. Also, any changes in your medications will be discussed. This will also be a good time to talk about returning to work and when you can drive and resume other activities.

Before you leave, you will need your intravenous (IV) line removed and you may require a prescription to take to your pharmacist.

Follow-Up Appointment

Expect to be contacted by your electrophysiologist's office to schedule a follow up appointment. If you have not been contacted within a week, call the office.

For your follow-up appointment, make sure you bring:

- Your medication list and your medications in their original packaging
- A list of any questions or problems you wish to discuss

Discharge Checklist

Before you leave, make sure you have received information about:

- Medication changes
- Symptoms to report
- Activity guidelines
- Driving restrictions
- Return to work

At Home

In general, if you are discharged the same day as your procedure, take that day to rest at home.

Caring for Your Puncture Site

Keep the area around the puncture site dry for 48 hours after your procedure. Wear loose-fitting clothing for a few days.

Avoid taking a shower or any activity in which the area may get wet. If the bandage gets wet, replace it with a dry one.

The bandage can be completely removed 72 hours (three days) after your procedure.

Bleeding

If there is a small amount of bleeding, lie down and apply pressure for several minutes to the site where the bleeding is coming from. If the bleeding stops, remain quiet and keep the leg straight and still for two hours. If you are not sure about what you should do, call the Heart Institute Nursing Coordinator at 613-761-4708.

If there is a large amount of bleeding, or if the bleeding does not stop, call 911 immediately. Do not drive yourself to the hospital; do not have a family member drive you to the hospital. Lie down and continue to apply pressure to the puncture site until the ambulance arrives.

Mild pain around the puncture site will gradually go away after a few days. If your puncture site becomes more painful, starts to swell or becomes warm to touch, call your doctor or, if the office is closed, call the Heart Institute Nursing Coordinator at 613-761-4708.

What to Watch for at Home:

Call the office of the doctor who did your procedure right away if you notice:

- A sudden increase in swelling or bruising around the puncture site
- The puncture site starts to drain pus
- You develop a fever or if your temperature goes higher than 38°C (100°F)

If the office is closed, call the Heart Institute Nursing Coordinator at 613-761-4708.

Call **911** if you:

- Have bleeding that does not slow down, even after you press firmly on the site for several minutes
- Any sudden onset of shortness of breath
- Your arm or leg feels numb or tingles
- Your hand or foot feels very cold or changes colour.

Activity

Depending on how you feel, you can start getting back to your normal activities the day after your procedure. If you have any questions about specific activities, make sure you ask your doctor.

If the puncture site is in your groin, try to limit the amount of stair climbing for a couple of days after your procedure—this will help with healing.

For 48 hours after the procedure, avoid lifting anything that weighs more than 10 pounds. If you have to sneeze or cough, try to apply pressure to the puncture site at the same time—this will reduce the risk of bleeding. The easiest way to apply pressure is to make a fist and place it firmly over the puncture site.

If there has been no bleeding or other signs of trouble at your puncture site, you can return to all your usual activities after a week. If you are not sure, call the office of the doctor who did your procedure.

Returning to Work

Before you go home, talk to your doctor about returning to work. If you have a job that involves mostly sitting, you will probably be able to go back to work within a few days. If your work is more active or involves heavy lifting, you may have to stay home a bit longer.

Driving

You must not drive yourself home. Make arrangements to be driven home by a relative or friend. If such arrangements are not possible, a taxi may be acceptable if approved by your doctor. Do not drive or operate any motorized vehicle for at least two days following your procedure.

