Atrial Fibrillation: The heart of the matter
This booklet has been written especially for people with atrial fibrillation (AF), a heart condition often described as an irregular heartbeat (also known as arrhythmia). It explains what happens to your heart in AF. It also addresses the risk factors and symptoms associated with AF, the possible long-term complications that can result if you are not properly monitored and treated, and what you can do to improve and maintain your quality of life.

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Your Heart and Heartbeat

Sinus node
Atrioventricular node
Bundle of His
Purkinje network

RA - Right atrium  RV - Right ventricle
LA - Left atrium  LV - Left ventricle
The heart is a muscle, about the size of a clenched fist with four major sections called chambers—two collecting chambers called atria (the top chambers) and two pumping chambers called ventricles (the bottom chambers). The heart’s role is to pump blood around the body; it works every second of every day.

Your heart has its own electrical system that signals it to beat, usually at an average of 60 to 80 times per minute (at rest). This gives your organs and cells the blood and oxygen they need to work.

The heart needs to expand and contract to pump blood throughout the body. This motion is controlled by an electrical signal that starts in the right atrium, originating from the natural pacemaker of the heart—a group of cells called the sinus or sinoatrial (SA) node. The signal then travels to the ventricles via the atrioventricular or AV node. The signal causes different parts of the heart to work together and create a heartbeat with a regular rhythm.
Understanding AF

AF is the most common type of arrhythmia (irregular heartbeat)
When you have AF, the heart beats out of rhythm

AF is the most common type of arrhythmia (irregular heartbeat). In AF, the electrical signal controlling the heartbeat becomes confused, and the atria quiver rapidly and unevenly, changing the constant rhythm of the heart. This leads to an irregular and usually rapid beating of the pumping chambers (ventricles).

You may experience symptoms or you may not

AF can occur intermittently or may be continuously present. Some people show very clear AF symptoms when they have an AF episode. Others may have no symptoms at all. The same person can sometimes feel that his/her heart is out of rhythm, and other times not feel it. Regardless, AF is a condition that needs to be taken seriously.

Palpitations (an irregular and rapid heartbeat, typically experienced as a rapid thumping in the chest) are the most common symptoms of AF. You may also experience a wide range of other symptoms, including:

- Tiredness or weakness;
- Dizziness, light-headedness or fainting;
• Chest pain, discomfort or shortness of breath (particularly with exertion or anxiety);
• Becoming easily tired after being active or exercising.

The causes of AF

Age is an important risk factor for AF. As we get older, changes in our heart make us more susceptible to developing AF. Although AF is more common after age 65, it can occur at younger ages as well. Quite often, the underlying cause of AF is unknown. In some people, AF develops as a result of other existing conditions, such as high blood pressure (the most common of the known causes), structural heart defects (such as diseases of the heart valves), heart infections or inflammations (myocarditis or pericarditis), congenital heart disease, obesity, heart attacks, congestive heart failure (CHF), lung conditions (such as bronchitis or pneumonia), an overactive thyroid gland or excessive alcohol use. However, these are not the only causes and, for some people, there may appear to be no obvious reason.

The different types of AF

There are three types of AF, which are characterized by the duration of the symptoms.
**Paroxysmal AF:** The heart sporadically falls out of normal rhythm. Episodes are temporary (sometimes recurring), they can come and go on their own and stop on their own, usually lasting no longer than one week.

**Persistent AF:** Episodes last longer than one week and do not go away on their own. Medical treatment is necessary to restore normal rhythm.

**Permanent AF:** A person’s irregular heartbeat lasts for more than a year and does not return to normal rhythm, even with medical treatment. Some patients with permanent AF do not feel any symptoms.
The Burden of AF

AF affects more and more people each year

The risk of AF tends to increase as people age. And since life expectancy for Canadians is on the rise, so too is the likelihood of more people developing AF.

In Canada, AF affects about 3% of people over the age of 45 and 6% of people over 65. There are approximately 250,000 Canadians currently living with AF. After the age of 55, the incidence of AF doubles with each decade of life.

AF is a serious condition with serious consequences

AF increases your risk for stroke. Because of the irregular way the heart beats in AF, blood clots can form in the chambers of the heart (atria). These clots can then travel to the brain or other parts of the body. Clots that lodge in the brain can result in a stroke.

The risk for stroke varies with each person. In some people, the risk may be as low as 1% or as high as 15%. This risk increases with age, such that after age 60, one-third of all strokes are caused by AF. Also, individuals with AF have a three to five times greater risk for stroke caused by a blood clot (ischemic stroke).
AF can sometimes cause long-term damage to the heart. Over time, having an uncontrolled heart rate for long periods (weeks or months) can damage the heart muscle, reducing its ability to pump as well as it needs to. This can lead to long-term complications, such as heart failure and other heart conditions.

**Having AF increases your chance of going to hospital**

One-third of all men and one-half of all women suffering from AF end up in the hospital as a result of their condition. Hospitalizations due to AF have increased over time and represent one-third of hospitalizations for arrhythmia.

Frequent trips to the hospital for repeated episodes of AF can disrupt your life, causing significant emotional and physical distress to you and your family.

**Seeing the appropriate doctor to treat your AF**

For those individuals who have no symptoms, their AF may only be detected by their doctor during a visit for other medical conditions or when performing other routine tests. For those people who do have symptoms, the best approach is to contact a family doctor who will typically perform some tests and may then refer you to a cardiologist. You may also be referred to a cardiologist specializing in heart rhythm disorders (an electrophysiologist).
Your doctor will decide which strategy is best for you based on your symptoms and risk factors.
Due to the potential complications of AF, it is important to understand how to effectively manage your condition. Your doctor will work with you to decide the best treatment approach for your AF.

**The goals of AF management:**

- Reducing your risk of stroke;
- Reducing the burden of AF on your quality of life;
- Reducing your risk of being hospitalized as well as the risk of developing illnesses as a result of long-term heart weakness.

**Several treatment options are available to manage and/or prevent the complications associated with AF**

*Drug Treatments for AF*

**Drugs are currently the standard treatment for AF.** There are two different approaches to treating AF—rhythm control and rate control. Your doctor will decide which strategy is best for you based on your symptoms and risk factors.

Rhythm control employs medications that restore the normal heart rhythm (anti-arrhythmics). Rate control employs medications that slow your heart rate.
Most people with AF will also need to take **blood thinners** (anticoagulants or antiplatelet agents) to reduce the risk of stroke. The type of medication chosen will depend on your risk factors for stroke, such as heart failure, high blood pressure, age (over 75 years), diabetes and prior stroke or mini stroke (transient ischemic attack or TIA). In most cases, these drugs need to be taken for life.

**Non-drug Treatments for AF**

If drug treatments do not work or cause unpleasant side effects, it may be necessary to offer a different solution.

Physicians may elect to perform an **electrical cardioversion** that will “shock” the heart back into its normal rhythm. This procedure involves a machine called a defibrillator that is used to deliver a brief electrical shock between two electrical pads placed on the chest and back.

For some, an additional procedure called **catheter ablation** may be performed to treat AF. This procedure involves making multiple, strategically placed lesions in the chambers of the heart (atria). A form of energy (usually radiofrequency) is used to destroy or eliminate the abnormal heart tissue that is causing the electrical disturbance. These lesions are intended to isolate and stop the electrical impulses that cause AF.
The best treatment for you

Treatment for AF must be individualized for each person. There may be several different options to choose from, and your doctor will explain the benefits and possible side effects of each before deciding on a preferred option.

Because of the variety of treatment options in AF, it is not unusual to try different treatments until the best option is found for you. Be patient—it is for your own benefit.

And do not stop taking the medications just because your symptoms have gone away or because you think they are not working. Remember that your medications are also reducing your risk of developing long-term complications associated with AF.

Speak to your physician regarding any concerns you may have about your treatment.

Side effects with your treatment

As with most medications, you may experience some side effects from the treatments you are taking for your AF. Some are mild and stop soon after you start your therapy. Others may last longer and be more bothersome to you. Either way, you should not stop taking your treatment without medical advice.
For many people, living with AF is a life-long journey.
Everyday tips

For many people, living with AF is a life-long journey. Here are some lifestyle considerations that can help you:

- Be active, but before you do any physical activity that involves great exertion, check with your doctor or nurse to see what a safe and reasonable level of activity is for you before you start.

- Eat a diet that is low in saturated fat, trans fat and sodium, and include vegetables, fruit, fibre and lean protein. Ask your doctor, nurse or pharmacist for diet tips, especially if you take oral anticoagulants.

- Avoid common triggers of arrhythmia. Limit your alcohol intake, quit smoking, and stay away from second-hand smoke.

- Have your blood pressure and cholesterol monitored regularly, as recommended by your physician. If they are high, keep them under control through lifestyle changes and medications.
• Reduce stress and find ways to manage or control stress that is unavoidable.

• Be aware that some over-the-counter (OTC) medicines and natural health products (i.e., herbal remedies or supplements) contain substances that can interfere with your medications. Speak to your physician and pharmacist before taking any other types of medications or natural health products.

• Go for your regular check-ups—they will help you maintain your quality of life.

When should I go to my doctor?

It is important to see your doctor if:

• You experience marked weakness or tiredness, dizziness, fainting or loss of consciousness, difficulty breathing or chest pain;

• You feel unusually unwell;

• You experience episodes of bleeding;

• You are concerned about side effects from your medicines.
Glossary
**Ablation**: A procedure that is intended to isolate and stop the electrical impulses that cause AF through multiple strategically placed lesions in the atria.

**Anticoagulant**: A medicine that thins the blood and helps prevent blood from clotting.

**Antiplatelets**: A medicine that inhibits the function of platelets.

**Arrhythmia**: Any change in the normal rhythm of the heart.

**Atrial fibrillation (AF)**: The most common type of arrhythmia. When you have AF, the atria of the heart quiver rapidly and unevenly—changing the constant rhythm of the heart.

**Atrium (pl. “atria”)**: One of the two smaller upper chambers of the heart. The right atrium receives blood from the body. The left atrium receives blood from the lungs.

**Cardioversion**: A method to restore a heart to normal sinus rhythm. This can be done using electric shock (electric cardioversion) or medications (pharmacologic cardioversion).

**Clot**: A mass of blood that can form when the flow of blood is slowed down.
**Heart failure**: A condition in which the heart cannot pump enough blood to the body’s other organs. The heart keeps working, but not as efficiently as it should. People with heart failure have difficulty exerting themselves because they become short of breath and tired.

**Heart rate**: The speed at which the heart beats. A normal resting heart rate is between 60 and 100 beats per minute, although this varies from person to person.

**Heart rhythm**: The rhythm pattern in the sequence of heart beats.

**Hypertension**: High arterial blood pressure, generally defined as being above 140 mm Hg systolic and 90 mm Hg diastolic (140/90). Normal blood pressure is considered to be around 120/80.

**Stroke**: What happens when a blood vessel carrying oxygen to the brain is blocked by a clot or bursts, leaving part of the brain without the blood (and oxygen) it needs to stay alive.

**Ventricles**: The two lower chambers of the heart. The left ventricle pumps blood to the body. The right ventricle pumps blood to the lungs.
When I was first told in 2005 that I had atrial fibrillation, I had never heard of this heart condition before. The diagnosis left me feeling anxious, and I worried about what would happen to my career as a hockey player. Not having a lot of information at my fingertips didn’t help. The good news is that things are changing quickly. Atrial fibrillation is now being more widely recognized as a potentially serious but treatable heart condition. The more you can find out about atrial fibrillation, the better you’ll be prepared to deal with its effects and the more you’ll be able to influence your outcome. I am living proof that with the proper treatment, you can live a long and fulfilling life.

Mario Lemieux