ATRIAL FIBRILLATION

KNOWING IT
TO AVOID ITS RISKS

Stop af

United against Atrial Fibrillation

ALliance to Fight Atrial Fibrillation

A common arrhythmia that can be fought.

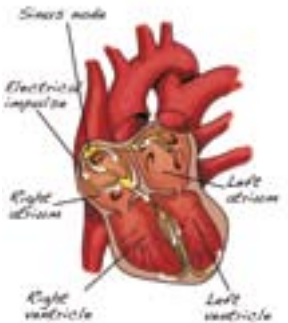
WHAT IS ATRIAL FIBRILLATION?

Atrial fibrillation is the most common cardiac arrhythmia.
It causes annoying symptoms that noticeably worsen the quality of life and can cause strokes, heart failure, and even reduce life expectancy.
However, atrial fibrillation can be fought: the currently available therapies can solve many disorders and help to avoid possible complications, improving the quality of life and increasing life expectancy.

Atrial fibrillation: a short-circuit of the heart...

HOW DOES THE HEART WORK?

The heart is a hollow muscle formed by four cavities. It contracts and relaxes rhythmically, acting like a pump for the blood. When it relaxes blood comes in, when it contracts blood gets out and is pumped throughout the body.
But why does the heart contract? Because of an electrical impulse, originating in the atrium, in a point called sinus node.Through thin filaments, the impulse first spreads to the atria's walls, causing their contraction, then it goes to the ventricles' walls, and makes them contract, too.



THE HEART IN ATRIAL FIBRILLATION

There are however cases in which the heart can short-circuit; this is the case with atrial fibrillation. What happens exactly?
The electrical stimulation that develops in the atria breaks up into hundreds of impulses per minute. As a result, the atria's activation is chaotic and their contraction is disorganized.
This irregular contraction of the atria does not permit the heart to work to its full potential: in short, the blood is not pumped efficiently and staunches in the upper cardiac chambers, leading to the risk of the formation of blood clots (thrombi) and embolisms (especially strokes). Furthermore, some of the impulses generated in the atria are transmitted to the ventricles at variable intervals, causing an increase of the heart rate and irregular ventricular contractions, originating the sensation we call "palpitations".

The most common symptom? Palpitations.

1 out of 100 people suffer from it!

WHAT ARE THE SYMPTOMS?

The main symptoms of patients suffering from atrial fibrillation are:

PALPITATIONS
The sensation of an accelerated and irregular heartbeat

DYSPNEA
Shortness of breath during physical efforts

FATIGUE
Physical tiredness

DIZZINESS
Light-headedness

SYNCOPE
Fainting

ANGINA
Retrosternal chest pain and discomfort

HOW COMMON IS ATRIAL FIBRILLATION?

Atrial fibrillation is an arrhythmia typical of elderly people. According to epidemiological researches, the prevalence of this arrhythmia progressively increases with age. It ranges between 0.5% in the 50-59 years decade and 8.8% in the 80-89 years decade.

Atrial fibrillation is therefore linked to age; however, there are other conditions that can cause it:

Some figures:

- **Average age:** 75
- **Sex:** slight prevalence of males (given the same age)

	ITALY	U.S.A.
AF confirmed cases*	600,000	3,000,000
New cases per year	120,000	300,000/600,000

- **1 out of 100 people suffer from AF**

* Figures available refer only to confirmed cases, as many people suffering from atrial fibrillation don't show any symptoms. If we were to count these too, the figures would probably double.

How much does it cost us?

This large-scale phenomenon has consequences from both a social and a financial point of view.

	ITALY	U.S.A.
Average annual cost for each patient	3,200 €	20,700 $
Overall national cost per year	3,3 billion €	6 billion $

Fighting atrial fibrillation is therefore, not only a key to individual well-being, but also a mission that needs to be taken for the collective well-being.

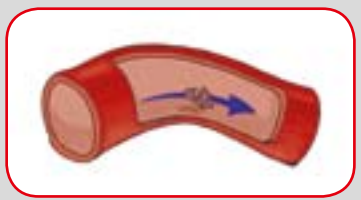
Beware of strokes!

Very often atrial fibrillation doesn't show any symptoms.

WHAT ARE THE COMPLICATIONS?

The main risk of complication with atrial fibrillation is stroke.
When the heart is in fibrillation, the atria no longer contract regularly, the blood tends to staunch in the upper cardiac chambers, and thrombi are formed - in other words, clots that can easily come off from where they are deposited.
By travelling through the blood, these clots can reach the brain and obstruct a cerebral vein, causing a stroke. On average, the risk of stroke is 5 times higher in subjects with atrial fibrillation compared to those who do not suffer from it.

Formation of a thrombus



A thrombus in the blood vessel

Stroke

Factors that increase the risk of stroke:

- Over 65 years of age (and especially over 75)
- Female subjects
- Hypertension
- Diabetes
- Heart failure
- Prior strokes
- Coronary artery disease and vessel disease

Other complications linked to atrial fibrillation:

- Heart failure (3 times higher than those who do not suffer from atrial fibrillation)
- Dementia
- Higher mortality rate (mortality is twice as high as those who do not suffer from atrial fibrillation)

ARE THERE DIFFERENT TYPES OF ATRIAL FIBRILLATION?

In terms of its duration, atrial fibrillation can be:

Paroxysmal: it ends spontaneously in a couple of days.
Persistent: it lasts until a cardioversion is performed, with restoration of normal sinus rhythm.
Permanent: the problem is not solved, despite attempts at bringing the heart rate back to normal levels. In this case, with the help of a doctor, the patient learns to deal with his or her condition.

According to its symptoms, atrial fibrillation can be:

Symptomatic: the patient has the classic symptoms of the pathology (palpitations, shortness of breath, dizziness, etc.).
Asymptomatic: the patient perceives no symptoms at all. This is an extremely dangerous form of atrial fibrillation, because the person suffering from it is not "warned" by his or her body. And having it without knowing about it also means not treating it, thus noticeably increasing the risk of stroke.

Check your pulse once a week!

An electrocardiogram will discover any arrhythmia.

WHAT CAN I DO?

You have to learn to listen to your body and check your pulse.
Being aware of your heartbeat is extremely important: it could reveal abnormalities in the heart rate or rhythm, and could signal atrial fibrillation.
We can control our heart rhythm by checking the radial pulse.
How do you check your pulse?

How many beats did you count?

Normally, you should have **between 60 and 100 beats per minute,** but each of us is different and there may be variations that should not be cause for concern.
In fact, some people's heart rate could be higher than 100 beats per minute or lower than 60.
This depends on age, on anxiety or stress, on physical activity, on caffeine, on medical drugs or on any illness.

1 Take a watch and sit down for five minutes. This way you will check your pulse while resting.

2 Turn one hand palm upwards and bend your elbow slightly.

3 Place the index and middle fingers of the other hand on your pulse, at the base of your thumb. Move your fingers to find the point where the skin is intermittently raised and press down lightly.

4 Count the beats for 30 seconds and at the end, multiply by 2: this is your heart rate per minute.

It is advisable to check your pulse at least once a week.

WHEN SHOULD I CONSULT A DOCTOR?

- When the heart rate is much higher or much lower than usual.
- When you notice that the intensity of the pulsation is not even (for example, when you perceive a weak pulsation, followed by a very strong one).
- When you notice that the interval between pulsations continuously changes.

THE DIAGNOSIS

If your heart rate is too fast, too slow or irregular, you should contact a doctor for a more accurate diagnosis. This diagnosis is made by means of an electrocardiogram.

Normal ECG

ECG with atrial fibrillation

In the presence of atrial fibrillation, the ECG will highlight the absence of P waves, that are replaced by small irregular oscillations, the so-called f waves.
Furthermore, the interval between one beat and another, known as the R-R interval, isn't always the same.

If you are diagnosed with atrial fibrillation, do not worry. There are various solutions that can help to solve or manage the problem. First of all, your doctor will choose one among two therapeutical strategies: rhythm control or rate control.

The rhythm control strategy interrupts the arrhythmia.

THE RHYTHM CONTROL STRATEGY

The rhythm control strategy aims at bringing the patient's sinus rhythm back to normal. This can be done in two ways: through cardioversion, allowing the interruption of the arrhythmia, or through medical therapies aiming at the prevention of the arrhythmias' recurrences.

The cardioversion can be:

Electrical
carried out using the procedure of defibrillation

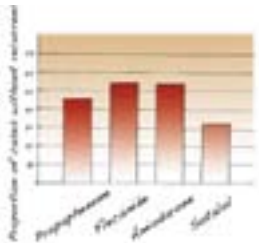
Pharmacological
with the administration of anti-arrhythmic drugs

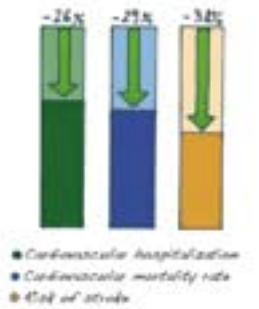
The prevention of the arrhythmias' recurrences can be:

Pharmacological
with the administration of anti-arrhythmic drugs

Non-pharmacological
through an operation called ablation

Medical drugs to "calm" your heart.





ANTI-ARRHYTHMIC DRUGS

Anti-arrhythmic drugs modify the heart's electrical properties, preventing recurrences of the arrhythmia.
More specifically, they act at the cell membrane level, obstructing sodium and/or potassium ion channels. This reduces the electrical impulse, and the cells aren't excitable for a longer time.

Today, the most common drugs are **amiodarone, flecainide, propaphenone** and **sotalol.** However, these drugs only guarantee a relative effectiveness, as fibrillation recurs in about half of the cases within a year of treatment. Moreover, these drugs can have important side effects and can sometimes be more harmful than useful, thus reducing the potential benefits for the sinus rhythm. For example, they can create more serious arrhythmias than atrial fibrillation, and affect the pumping function of the heart.
Amiodarone is the most effective among these drugs, even if the least tolerated: it follows that other drugs are preferred at first, and amiodarone is generally used as the second alternative.

A new molecule, **dronedarone**, has recently been discovered; it has proved to be reasonably effective and, above all, easier to tolerate.
Compared to treatment with a placebo, a dronedarone-based treatment of paroxysmal and persistent atrial fibrillation significantly reduces the arrhythmias' recurrences, the cardiovascular hospitalization (- 26%), the cardiovascular mortality rate (- 29%) and the risk of stroke (- 34%).

Ablation: an operation with 70% success rate.

ABLATION

Ablation is an alternative to anti-arrhythmic drugs: it is an operation that destroys the area of the heart where the arrhythmia begins and thrives, and can be either transcatheter or surgical.

In **transcatheter** ablation, several catheters are inserted into the femoral access, in the groin area, and directed to the heart through the vessels.

The catheters reach the right atrium and, after having pricked the septum dividing the two upper chambers of the heart, two of them are pushed into the left atrium, next to the pulmonary veins.

At this point, the first catheter maps the electrical impulse from the veins to the atrium, and the second one destroys the area around the veins' opening. In this way, the left atrium is electrically isolated from the pulmonary veins, the main cause of the electrical impulses that generate fibrillation.

In some cases - above all in long-lasting and persistent fibrillation - in order to prevent the arrhythmia, it may be necessary to create lesions in other parts of the atria, too.

When ablation is **surgical**, either an operation in which the thoracic cage is opened, or a mini-endoscopic thoracotomy are carried out.

Ablation has a success rate of around 70%.
The risks of serious complications linked to this procedure are around 3 - 4%.

The rate control reduces the ventricular contraction.

THE RATE CONTROL STRATEGY

This option is considered when the patient, despite attempts at cardioversion, still suffers from atrial fibrillation. In this case, the ventricular contraction's rate has to be reduced, to avoid palpitations and the risk of heart failure.

This can be done in two ways:

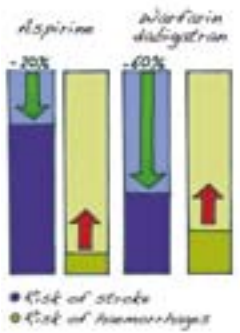
Through drugs depressing the atrioventricular node:
These drugs slow down or block the flow of electricity from the atria to the ventricles.

Through ablation and implanting of a pacemaker:
Ablation destroys the atrioventricular node, thus preventing the flow of electricity from the upper part of the heart to the lower one.The implanted pacemaker becomes the alternative source of energy that provides electricity to the ventricles, allowing them to work even without "natural" impulses.

And now... let's eliminate the thrombi!

ANTITHROMBOTIC THERAPY

The treatment strategies described above should be supported by an antithrombotic therapy. As we have seen, a thrombus is a blood clot that can potentially cause a stroke. To prevent its formation, patients are treated with anti-platelet or oral anticoagulant drugs.



An anti-platelet drug commonly used for patients with atrial fibrillation is **aspirine**, reducing the risk of stroke of nearly 20%.
Oral anticoagulant drugs like **warfarin** and **dabigatran** are more effective, reducing the risk of stroke of 60%, but increasing the risk of haemorrhages.

Your doctor will suggest the therapy that best suits you, considering the type of atrial fibrillation, your symptoms and the blood test results. Generally speaking, aspirine is given to people who show a low thromboembolic risk, whereas oral anticoagulant drugs are more suitable for those with average or high thromboembolic risk.

Low thromboembolic risk (CHA_2DS_2VASc 0) = aspirine
Average / high thromboembolic risk ($CHA_2DS_2VASc \geq 1$) = warfarin, dabigatran

In patients with atrial fibrillation and high thromboembolic risk, it is possible to occlude the atrial appendage percutaneously, either surgically or by using a device.

Do not underestimate atrial fibrillation. Check your pulse.

Atrial fibrillation is a very common problem, and is often underestimated.

In order to fight this arrhythmia, it is very important to diagnose it promptly. You can do it yourself, by checking the pulse on your wrist and consulting a doctor in case of any doubt.
If you suffer from atrial fibrillation, you will be prescribed tests and specific therapies: **take your doctor's advice and follow the treatment faithfully.**

There's something precious on your wrist. It's your pulse.

www.stopfa.org

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