Patient education

Patient education kit

Recommendations for discharged patients after a cardiac event

ISMETT Istituto di Ricovero e Cura a Carattere Scientifico

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A) GENERAL INFORMATION

Welcome back home!

In this booklet you will find useful information following your discharge from hospital: the main cardiac diseases, their causes, the most common diagnostic and therapeutic interventions and what to do to avoid getting ill again and having to return to the hospital.

Upon discharge you received two copies of your hospital discharge letter.

One copy is for you. We suggest you always carry it with you and show it at future follow-up visits or if you are sick and are taken to the emergency room.

The other copy is for your general practitioner to keep him or her informed of your health conditions and needs, and provide you with the necessary care. It is important you tell your general practitioner about your hospital admission a few days after your discharge.

Please remember it is important you take your drugs as described in your discharge letter, that you modify your lifestyle according to medical advice and that you undergo periodic follow-up.

Your discharge letter also includes the day when you are expected to return to ISMETT for your first follow-up after your discharge (the NHS prescription is not necessary for the first follow-up).

Contact your family doctor if you suspect that a drug is harming you or if you experience symptoms you've never seen before including shortness of breath, swollen legs, nausea after lunch, abdominal tension and lack of appetite, short-term chest pain or dizziness, fever higher than 38 °C, speech disorder or reduced strength of a limb for few minutes, or minor bleeding.

We recommend you refer to the ER immediately if you experience an increasing shortness of breath, chest pain lasting longer than 15 minutes, if you faint or have prolonged speech disorders or reduced strength of a limb, or major bleeding.

The following vaccinations are recommended:

- influenza vaccine
- pneumococcal vaccine

For any information or need contact us at +39 091 2192637 on Monday, Tuesday, Thursday, and Friday morning from 11 to 12 a.m.

B) GENERAL INFORMATION ON THE THERAPY

You can find the therapy that was prescribed for you in the section "Therapy **recommended upon discharge"** of your discharge letter. Following the therapy is key, together with changing your diet and lifestyle, to prevent another cardiac event like the one you recently suffered.

It is important you carefully follow the indications and the dosage of the prescribed medications. Take each drug at the indicated time and dose.
In order to work medications must be constantly present in your body in an effective concentration. If you stop taking them your disease will no longer be kept under control and there is a risk of its recurrence.
The medications you are taking are necessary to maintain and to improve your health.

Any medication may have undesired effects. If you experience a new symptom **do not** interrupt your treatment but contact your family doctor. Your family doctor will assess whether or not the symptom is related to the medications you are taking and will give you the best advice.
Always collaborate with your family doctor for the most appropriate use of your medications. This way you will obtain the best results for your health.

See below for a summary of the most used drugs in cardiology. Drugs are divided into classes and explained with simple words. Please read this information carefully to better understand your medications and the rationale for their prescription.

BETA-BLOCKERS: protect the heart from the toxic effects of stress-related catecholamines (adrenaline and noradrenaline). They reduce your heart rate and arterial blood pressure and therefore the work and the consumption of oxygen in the heart. Also they have an anti-arrhythmic action and protect

from sudden death. These medications are used for the following diseases: arterial hypertension, angina pectoris, acute myocardial infarction and post-infarction, arrhythmias, cardiac decompensation.

ACE INHIBITORS: mainly used for arterial hypertension. They have proven to extend the patient's life also in the post-infarction phase, reducing the left ventricular remodeling and dilation, and in the chronic heart failure. In a small number of cases they may cause a dry and persistent cough.

SARTANS: mainly used for arterial hypertension, diabetic nephropathy and cardiac failure. These medications cause arterial and venous vasodilation, reduce the secretion of vasopressin (that causes renal absorption of water and an increase of blood pressure) and decrease the synthesis of aldosterone (that causes water and sodium retention). These combined actions result in a decrease of blood pressure. They are often used as an alternative to ACE inhibitors, when the latter cause a cough.

DIURETICS: increase the urine output with a loss of sodium and, in part, potassium. They remove the often exceeding body water and lighten the cardiac load favoring the reabsorption of edema with a consequent weight loss. They are indicated for hypertension (often combined with other anti-hypertension drugs) and congestive heart failure to favor the loss of fluids.

CALCIUM CHANNEL BLOCKERS: class of medications used to treat hypertension, angina, or arrhythmia (Verapamil). They affect the vessels' smooth muscles and also the cardiac muscle reducing its contractility capacity determining its release and reducing the peripheral vascular resistances with a subsequent reduction of the arterial blood pressure. Dihydropyridine calcium-channel blockers reduce the arterial blood pressure and also dilate the coronary arteries. Non-dihydropyridine calcium-channel blockers (Verapamil and Diltiazem) also reduce the heart rate.

ANTI-ARRHYTHMIA DRUGS: used to prevent or to correct the heart rhythm abnormalities (arrhythmias). They can affect the number of beats per minute, slow down the cardiac rhythm, for example reducing the number of extra-systoles or interrupting supraventricular or ventricular paroxysmal arrhythmias.

ANTIAGGREGANTS: also known as antiplatelet drugs, they inhibit platelet

aggregation and prevent the formation of clogs and embolisms of thrombotic origin. The most common antiaggregants include acetylsalicylic acid, clopidogrel, ticagrelor, prasugrel, etc. In myocardial infarction patients or undergoing percutaneous coronary revascularization with stent implantation, antiaggregants are more often prescribed in pairs (double anti-aggregation) to achieve stronger protection in patients at high risk of arterial thrombosis (usually for 12 months after an acute myocardial infarction, for one month after elective angioplasty with metal stent, and for 12 to 18 months after an elective angioplasty with a medicated stent). However, they can have adverse effects on the gastrointestinal tract therefore a gastric protector is generally administered.

ANTI-COAGULANTS: drugs capable of slowing down or stopping the blood coagulation process. They are used for preventive purposes under particular conditions that increase the risk of thrombosis, e.g., during atrial fibrillation, and also for therapeutic purposes when the thrombosis has already occurred and it becomes necessary to prevent the detachment or extension of the thrombus (e.g. venous or intracardiac thrombosis or pulmonary embolism). The most commonly used are heparin, administered intravenously in acute patients or subcutaneously in chronic patients and oral anticoagulants like warfarin that inhibits the activity of the vitamin K co-responsible for the synthesis of the liver factors that activate blood coagulation. In the latter case, it is essential that the blood coagulation is estimated within a safety range. The laboratory parameter used in this case is the INR (International Normalized Ratio). The range of efficacy to remain within safe limits is between 2 and 3 for patients with atrial fibrillation, and between 3 and 4 for cardiac mechanical valve prosthesis carriers. Recently new anticoagulants not requiring INR estimate to monitor the coagulation status have been introduced on the market (e.g. dabigatran, rivaroxaban, apixaban, edoxaban).

VASODILATORS: drugs that cause the dilation of the blood vessels, resulting in an increased blood flow to release the smooth muscle of the vascular walls. The most commonly used is nitroglycerin often administered in the form of a band aid, pearls or sublingual drops. These drugs have an anti-anginal and vasodilating effect. They reduce the burden of the heart and favor the blood flow to the tissues. They are mostly used for treatment and prophylaxis of stress-related stable angina pectoris and for unstable angina and myocardial infarction. It is also useful to treat cardiac decompensation, acute pulmonary edema, hypertensive emergencies and acute coronary syndromes.

STATINS AND OTHER HYPOLIPIDEMIC DRUGS: statins are used to reduce low-density lipoprotein (LDL) cholesterol, a.k.a. "bad" cholesterol, to the levels recommended by the international guidelines for subjects with a full-blown atherosclerotic disease:

Previous infarction, stroke or transient ischemic attack, peripheral obliterative arteriopathy and carotid arteriopathy: **<70 mg%**
High-risk subjects according to the risk assessment charts: **<100 mg%**
Subjects at moderate risk according to the risk assessment charts: **<130mg%**

Fibrates (fenofibrate, gemfibrozil) can be used to decrease high triglycerides.

To enhance the cholesterol-lowering effect of the statins, **Ezetimibe**, a drug that reduces intestinal absorption of food-derived cholesterol, can be combined.

The **n-3 polyunsaturated fatty acids** (n-3 PUFAs) can be used to reduce triglycerides and are useful following a heart attack.

C) DIET

General advice
This fact sheet contains some basic dietary rules to prevent the further onset of cardiovascular diseases. These are small recommendations for a more correct food lifestyle and simple explanations on the importance of these rules. Please read the following carefully.

Most risk factors for cardiovascular diseases (especially high blood cholesterol, high blood pressure, an overweight or obese condition, and diabetes) are related to an inappropriate food intake. **Cholesterol** is one of the major causes of cardiovascular diseases, due to the fact that this substance easily enters and accumulates in the arteries, and tends to occlude them. Foods of animal origin (with the exclusion of fish) and a high calorie intake cause the formation of LDL "bad" cholesterol that tends to accumulate in the blood vessels.

A correct and balanced diet, like the so-called Mediterranean diet, can regulate all the main risk factors linked to our food intake with a proper supply of nutrients:

Dietary fats: depending on their type and quantity these fats reduce high-density lipoprotein cholesterol (HDL), a.k.a. "good" cholesterol, and increase LDL cholesterol. **Triglycerides** are also important, although less than cholesterol. A higher intake of unsaturated fats (for example those contained in raw olive oil) compared to saturated fats (meat fats) not only decreases the cholesterolemia, but also the aggregation of platelets and the inflammatory factors that have a relevant role in the development of atherosclerosis and thrombosis.

Proteins: diets too rich in animal proteins (steaks, chicken, etc.) involve an increased risk of cardiovascular diseases, quite the opposite of a diet rich in vegetable proteins. **Legumes** (lentils, beans, chickpeas, etc.) should therefore be preferred.

Carbohydrates and sugars: diets too rich in complex carbohydrates (pasta and bread) and with an excessive intake of simple carbohydrates with a high glycemic index (sweets and sugary foods) can increase the triglycerides, overweight, obesity and therefore diabetes.

Dietary fibers: a diet rich in fiber, with an appropriate amount of fruit, vegetables, legumes and whole grains, will decrease your blood sugars and cholesterolemia, and therefore reduce your cardiovascular risk.

Sodium: the risk of arterial hypertension can be reduced following a Mediterranean diet, with moderate amounts of cooking salt (3-5 grams a day). The consumption of preserved products such as cured meats and hard cheese should also be limited.

Antioxidants: fruit and vegetables are rich in protective substances that prevent and fight the oxidative stress reducing the cardiovascular risk: it is recommended to eat at least 3 portions a day.

Alcohol is one of the most important sources of calories. Reducing alcohol intake is important to control weight, blood sugar (in diabetic patients) and blood pressure (in patients with hypertension).

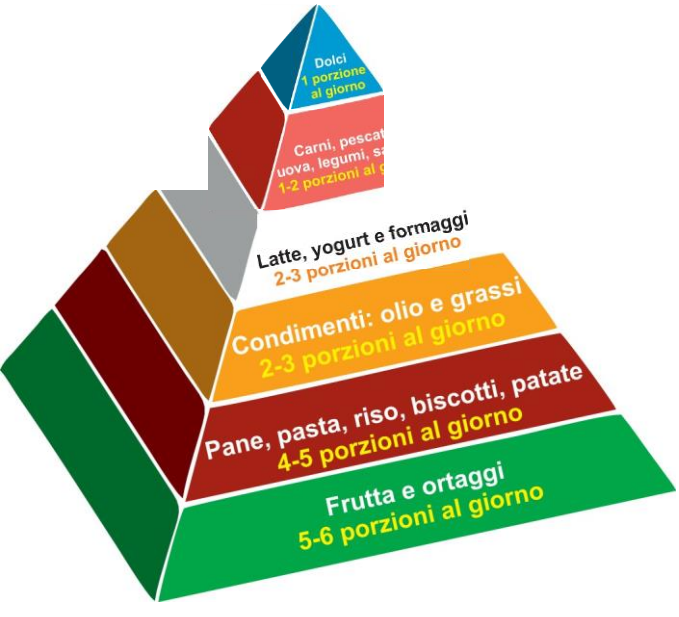
It is recommended to drink no more than one glass of wine (red wine is best for its antioxidant power) as it increases the HDL "good" cholesterol levels.

The intake of cheese, eggs, red meats, meats, sweets, sugary drinks and alcohol should be limited, whereas vegetables, fish and legumes can be eaten more often.

None of these food corrections alone is sufficient to exercise a preventive action, but taken as a whole, just as in the Mediterranean diet, they can effectively prevent and reduce the risk of cardiovascular diseases.

The Italian food pyramid of the Mediterranean diet is divided into six food groups arranged with different colors to stress how each group should be consumed in various amounts. Vegetables are at the base of this pyramid.

THE ITALIAN FOOD PYRAMID



Vegetables provide non-energy nutrients (vitamins, mineral salts, water) and fibers. Above these are complex carbohydrates such as pasta, bread, potatoes and cereals.

Throughout the day, your meals should be distributed as follows:
Breakfast, mid-morning snack, lunch, mid-afternoon snack, dinner.

It is preferable not to skip meals.

Breakfast should include semi-skimmed milk (one cup) or no-fat yogurt (one cup) or tea (one cup) or mature seasonal fruit (whole or squeezed) or sugar-free fruit juice (one glass), with whole-wheat rusks (3-4) or whole-wheat dried biscuits or whole grain (2-3 tablespoons) or whole-wheat bread (one slice) with one teaspoon of jam or honey.

Snacks can include fresh fruit (also in the form of fruit salad or fruit smoothie), but remember fruit will not fully satisfy your appetite so do not

have too much of it. You should eat not less than 2 but not more than 3-4 fruits a day. Alternatively, go for some lean yogurt or semi-skimmed milk, or vegetables (fennel, carrots).

Main meals (lunch and dinner) should always include at least one raw or cooked vegetable side dish.

Pasta, rice, potato gnocchi: one portion a day is allowed, preferably at lunch, without exceeding the inner edge of the soup plate. For the first course, we recommend you use vegetable dressings such as tomato and vegetable sauces, preferably cooked in a simple manner and using raw extra virgin olive oil. Small quantities of Parmesan cheese (one teaspoon) are allowed. Do not use butter, margarine, cream, bacon, eggs, cheese and béchamel as dressing for your meals.
Bread and potatoes: a small portion is allowed at lunch and dinner.
Potatoes are not to be considered as vegetables, but you may use them as a side dish instead of bread or pasta or rice.
Legumes (beans, lentils, peas, and chickpeas) should not be considered as a side dish, but as a second course instead of meat, fish, cheese, eggs or lean cold cuts.

We suggest you alternate your second courses during the week as follows:

- 2 times a week lean meat (veal, beef, lean pork, rabbit, turkey, lamb, chicken).
- 4 times a week or more: fish (fresh or frozen).
- 2 times a week legumes (lentils, beans, chickpeas).
- 2 times a week cheese (lean, preferably soft cheese like ricotta, tuma, scamorza, crescenza, mozzarella or creamy cheeses).

Do not eat too much mature cheese (i.e., pecorino, emmenthal, parmesan).

- 2 times a week lean raw ham or bresaola.
- 2 times a week eggs.

Once a week you may replace an entire meal with one pizza followed by a serving of fruit, reducing the amount of cereals during the day.
Drink mineral water or drinking tap water (at least 1.5 liters a day). Avoid carbonated and sugary drinks.
1 glass of low-alcohol wine is allowed at lunch and dinner. Remember not to exceed with seasonings. Oil, preferably extra virgin olive oil, should be used

in moderation (no more than one tablespoon per meal) and always raw. The following cooking methods should be preferred: grilling, steaming, baking, stewing and boiling. Preferably use non-stick baking tins and/or paper oven during pan cooking (avoid frying as much as possible).

Limit your salt intake. Use common cooking flavors or herbs, i.e. lemon, vinegar, parsley, basil, rosemary, sage, thyme. Butter, cream, mustard, stocks and ketchup should be used with moderation.

Other tips if you are overweight or obese
Losing weight is only possible if you set yourself a goal and a precise plan to achieve it, and really committing to this. Starting a diet is simple, the difficult part is keeping it up over time. Results are achieved only with perseverance.
Setting a plan (in agreement with your doctor) shall involve:

- Establishing a target weight you want to achieve.
- Establishing a deadline by which you want to achieve that goal.
- Establishing a measured and personalized daily diet.
- Checking and analyzing the accomplished results.

Establishing guidelines to keep up with your program.

1) Search within yourself for motivation. The reasons given by others are of little use. In case of cardiac failure losing weight is essential for a fatigued heart to rest. We must respect our heart. This means preventing it from working more than necessary carrying 10/20 kilograms in excess.

2) Always follow your diet. Eating is a mental habit that we can change, just as our tastes and the ways to achieve satiety.

A few other indications:

Try not to think about food outside meal hours. Avoid "tempting" situations (TV, parties, etc.).
Share your goal with your family so that they can help you control your cravings and follow your diet.
Connect calorie-rich food to health damage.

3) Realistic goals and flexibility Weight-loss goals must be realistic and attainable. Don't let it bring you down and don't be discouraged if sometimes you break a rule. Accept this with serenity and with the same attitude resume your program. Don't worry if you fail to achieve a goal. The important thing is to continue to gradually lose weight.

4) List emergency measures that can help fight your craving for food when it seems to become uncontrollable. This can occur several times and in different situations, especially in moments of mistrust. Everyone can choose which “emergency measure” is most appropriate. This can be a fairly long list and include walking, reading, going to the cinema, swimming, making a telephone call, and anything that can help you divert your focus away from food.

We hope that everything so far is clear.

However, if you need further clarification or have difficulty changing your food habits, please contact your general practitioner who will refer you to a specific center, nutrition specialist or dietitian.

D) PHYSICAL EXCERCISE

After your discharge it's important to understand that physical activity can effectively act as a medication. Physical activity affects the main modifiable cardiovascular risk factors: hypertension, dyslipidemia, obesity, sedentary behavior and diabetes. In particular, constant physical activity reduces LDL ("bad") cholesterol, increases HDL ("good") cholesterol, and reduces triglycerides and blood sugar levels. Also, lowering your blood pressure and heart rate will allow your heart to save energy. Other positive aspects include the reduction of circulating catecholamines (adrenaline, noradrenaline), the number and aggregation capacity of platelets (blood cells involved in the formation of blood clots), and activating the fibrinolytic system (blood proteins that help clot dissolution). Finally, remember exercise helps you maintain your ideal weight avoiding particularly harmful conditions such as overweight or obesity.

General advice

Many people who suffer a heart attack can perform non-stressful physical tasks such as walking or swimming. We all know that walking is the most natural physical exercise.

However at times we need to learn how to walk properly. Walk at a fast pace at least 30 minutes a day (you may split this time, but never less than 15 minutes). Get yourself a pedometer: the recommended goal is to reach 10,000 steps a day. Walking this way, adjusting your pace according to your breath is, by all means, physical activity.

Try walking with a friend: if physical activity is fun, it will be more fun to practice. This will increase your motivation and therefore continuity. Remember to always wear comfortable clothes and to go for a walk at least three hours after your main meals (two hours after breakfast). The best time is in the middle of the morning or afternoon (in any case before lunch or dinner). Gentle exercise is recommended for everyone.

Make your lifestyle more active:

AT WORK Use the stairs instead of the elevator. If your workplace is at a high floor take the elevator up to two floors below, then walk up. Taking the stairs is one of the most effective exercises to improve your health. If you are sitting for many hours, lift your arms and body often, easing yourself out of your chair.

AT HOME Reduce electricity consumption and use your muscles to mix food, wash dishes, mow your lawn, cut your hedge, and wash your car. Spend as little time as possible in front of the TV or computer.

COMMUTING Use your car as little as possible. Use your bicycle or walk any time you can. If you do use your car, park it at a distance from your workplace.

If you following these recommendations daily, benefits will become visible soon in terms of subjective well-being and improvement of blood chemistry parameters.

When exercising remember to monitor your heart rate at the wrist or using a pulse monitor. This is a simple formula to measure your maximum heart rate: 220 — age. Since you are ___ years old your theoretical maximum

heart rate is _____ therefore do not exceed _____ beats per minute.

If before or during a physical exercise:

a) you experience chest pain, suspected or previously identified as angina
b) shortness of breath
c) fever
d) palpitations
e) dizziness
f) you feel particularly tired

Do not perform any physical activity or stop if you already started, and inform your doctor.

For further advice and/or suggestions please contact your general practitioner who will advise you or, if necessary, refer you to a specialized center or professional for the necessary assessments.

Special advice:

In your case the following activity is also recommended:

- o bicycle or stationary bike
- o jogging
- o ……..

Duration of session:

- o 30 minutes
- o 60 minutes
- o ……

Frequency:

- o three times a week
- o every day
- o ……

Increase the session duration first; then increase the number of weekly sessions; and finally increase the training intensity. Warm-up for max 15 minutes with gentle exercises. If you do jogging, start by walking. If you cycle, start slowly (with no brake). You should also cool down following the same criteria.

During your training, your heart rate measured at your wrist or with the pulse monitor must never exceed the limit and be maintained for the recommended period.

Take a shower or a bath (neither too hot nor too cold) after your workout. Exercise is recommended for your well-being. There are no competitions or world records to be achieved!
Please note that any other sport activity is recommended only after a medical test and/or functional evaluation.

E) SMOKING

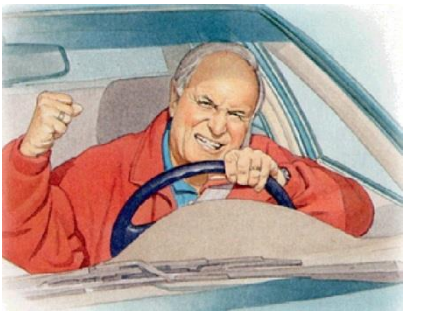
Now that you have been discharged, it is important you understand that smoking exposes you to the risk of new heart issues that could lead to a new hospitalization, and that it could damage your heart or even be fatal for you.

Everyone knows smoking is harmful for our health, for the heart and other organs (lung cancer), but because you have suffered a heart problem for you the risk is greater and you are more inclined to suffer a cardiac condition again in the future. Continuing to smoke means throwing away or at least significantly reducing all the benefits you reached during your hospital stay and the effects of your prescribed medications. On the other hand, we know that people who quit smoking live better and longer than those who do not. Reducing the number of cigarettes you smoke does not solve the problem as you will gradually go back to the usual quantity.

Quitting smoking is not easy, but with your commitment and willpower you can succeed, like many have done before you. In particular, it is important to take advantage of this moment when you have already had to give up smoking during hospitalization, because it is already under way and you must not start from scratch. However, if despite your conviction you do not succeed we recommend you contact your general practitioner or a local center of reference for help.

QUIT SMOKING ONCE AND FOR ALL!

F) STRESS



Stress is a reaction of the organism to demands and changes imposed by the environment (stressful agents). The symptoms of stress can be headache, anxiety, excessive appetite or lack of appetite, heartburn, impatience, sweating, depression, excessive alcohol use, low self-esteem, increased smoking, excessive concern, sexual problems, carelessness, passive acceptance of accidents. Stress plays an important role in heart diseases.

It increases the heart rate, blood pressure and blood sugar and can cause damage to the vessel walls. However, stress is not inevitable and it can be controlled. The key is to recognize stressful agents, which are numerous and vary from person to person, and change the way you respond to them. You may have to change your daily schedule and avoid unnecessary commitments (do I really need to be in this situation? Can it not be avoided? Can't someone else replace me?). However, if not modifiable, stressful agents can be considered and accepted. You need to change your mindset, and think about them. In other words, you can accept what you cannot change. You need to highlight all the good positive things of your life.

Self-control and prevention techniques

- Deep breathing is the most common technique to reduce stress. It is helpful even for a few minutes a day.
- A daily, relaxing, pleasant and comfortable physical exercise is another effective measure.
- Choose a time of the day to relax.
- Spend a good number of hours sleeping.

After a cardiac event: emotional aspects

A heart attack or other cardiac event can have a considerable impact on your mood, along with the most common sensations such as fear, anger and depression.

You will of course be afraid that the attack may happen again and that you are at high risk. Every small chest pain or shortness of breath can cause concern and anxiety. All this is normal and there are no solutions other than resuming a normal life. Only time, and resuming what you did before, will significantly reduce, anxiety and fear.

Then you will experience anger and ask yourself, “why me? Everything will be irritating, even your family life. It's hard to accept the new condition of being a patient. All this is absolutely normal. You'll need lots of patience and self-control: what happened to you is not fault of the people around you who participate in your illness. You need to be aware you are not the only one suffering and that a negative approach to life will make recovering a normal life more difficult.

Finally, you may experience a sense of depression. You may be depressed at the thought of no longer being strong and capable as you used to and you can't even work, having suffered irreversible damage and feeling an incomplete person. Depression is normal in people who have suffered a heart attack.
This can be overcome if you are determined to face daily life.

Useful tips

It's time for you to change your life! After a heart event you can return to life with new eyes.

There are many things you can do to take care of your heart.

You have the opportunity to start living a new life, and avoid what has caused your malaise.

Learn to recognize and accept your emotions, desires, and feelings: they convey important messages for your health and they enrich your days.

Learn to live better with your insecurities: we can't always have full control on everything, and illness is something that reminds us of our limitations.

Learn how to share your emotions with the others: this will help you live better and emotions will become less dangerous for your health.

Cultivate your relationships: a good network of friends and affections will give you a sense of security and protection.

Favor a relaxed family atmosphere and try to always have an equal relationship with your relatives.

The same considerations apply in the work environment.

Rediscover your free time: it's an important part of your life that you must learn to enjoy: it will help you keep healthy.

Pay more attention to your inner life and thoughts and your days will improve.

G) WORK

Most people suffering heart attacks or other cardiac events manage to return to work within 2 or 3 months.

Of course, both the level of severity of the cardiac damage and the work should be considered.

In your specific case we recommend a period of rest of.....

Cardiac patients who resume their work activity must:

- Plan the tasks to be carried out assessing the available time and setting a "physiological" time limit for their commitment.
- It's important to plan short breaks and, if necessary, some simple relaxation techniques.
- Learn to say “no” to unexpected and/or excessive requests at work.
- Split the activity into small tasks.
- Avoid perfectionism: learn to be patient.

- Delegate some of your responsibilities, possibly by enhancing your co-workers.

H) SEXUAL LIFE

Most patients maintain a normal sexual activity.

Normal sexual intercourse with your partner, in a familiar setting, with no additional stress, away from a large food or alcohol intake involves an effort equal to climbing a flight of stairs or washing the floor in your house.

If you are able to perform these activities, you can have sexual intercourse. Situations with a strong emotional involvement (such as extramarital relations) can instead be more dangerous.

If sex is a problem that causes anxiety, or if you experience chest pain or other symptoms while having sex, talk to your doctor who will help you find a solution.

Possibility of using PDE-5 inhibitors such as sildenafil, taladafil, or similar:

- allowed
- not recommended
- contraindicated (nitrate therapy)

I) DRIVING

The possibility of driving a car or a motorbike depends on your heart condition and your driving license.

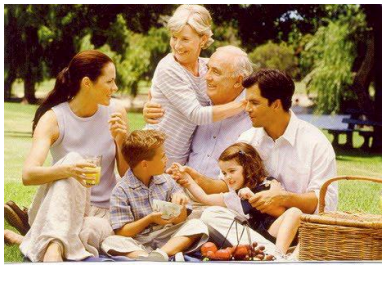
It is advisable you refrain from driving a car for:

- 2 weeks ("AB" type driving license)
- 3 months ("CDE" type driving license)
- ……..
- Permanently.

Your doctor will provide further guidance on what to do when you renew your driving license.

L) TIPS FOR PARTNERS AND FAMILY MEMBERS

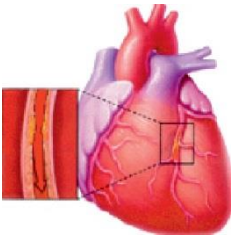
- Avoid to frequently criticize and/or reproach.
- Avoid conflicting moments. Being collaborative is the best thing to do, but without giving in to condescension.
- Avoid being excessively careful and overprotective: don't create insecurity.
- Try to be serene and optimistic. Cardiac patients deserve confidence!
- Cook light, digestible, varied meals, also for your family members, avoiding differentiated foods (this could be perceived as discriminatory).
- Quit smoking or at least avoid smoking in his/her presence.
- Sexual intercourse is allowed in clinically stable conditions.
- Deprivation and excesses can harm, not just the heart!



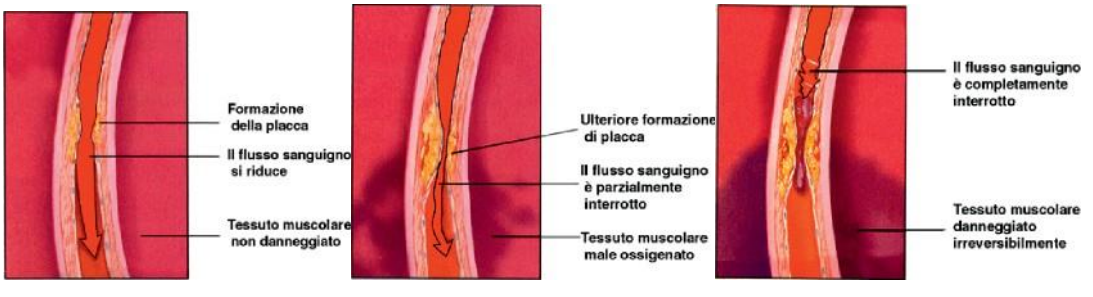
M) MAIN HEART DISEASES

Description, symptoms, diagnosis and treatment.

CORONARY ATHEROSCLEROSIS, CARDIAC ISCHEMIA, MYOCARDIAL INFARCTION, ANGINA PECTORIS



Coronaries or **coronary arteries** are the vessels that carry blood to the heart muscle. Coronary **ischemia** occurs when these arteries narrow or close, preventing the blood flow and therefore the oxygen supply to the heart.
The narrowing or closure of the coronary is due to the formation of an encrustation (called **plaque** or **atheroma**) on the inner wall of the vessel, a process called **atherosclerosis**. A plaque consists of several components, but **cholesterol** is one of the main responsible factors.
Moreover, atherosclerosis can affect all arteries and therefore organs others than the heart.
The coronary atherosclerosis process is gradual and can be summarized as follows:
1) Plaque formation: this slowly reduces the vessel's lumen and the blood flow to the heart muscle. At this initial stage, it is likely that no symptoms are experienced.
2) Increased plaque thickness resulting in partial blocking of the flow. At this point you may still not experience symptoms or you could have an angina attack (chest pain), especially if you are exercising. The pain ceases after a few minutes.
3) If a blood clot (**thrombus**) is attached to the plaque, the blood flow is completely blocked. In this case, a myocardial **infarction** occurs, which implies permanent and irreversible damage to an area of the heart muscle. The main and most frequent symptom of a heart attack is chest pain, which can radiate to the arms and neck.
The severity of all these scenarios depends on the number of coronary arteries obstructed by the plaque.



ANGINA PECTORIS

This is the first symptom indicating that the flow of one or more coronary arteries is partially obstructed, so it must be taken into serious consideration. Chest pain can sometimes be mistaken for indigestion or heartburn and it often disappears after a few minutes. The symptoms can be extremely different:

Chest discomfort, pain, heaviness, oppression or burning at the chest.
Heaviness, pain, numbness or tingling at the wrists, arms or elbows.

- Pain in the shoulders, neck or throat.
- Difficulty breathing, shortness of breath.

Angina is a reversible condition that leaves no damages to the heart.

Myocardial infarction
If there is a complete obstruction of one or more coronary arteries and the blood flow to an area of the heart is interrupted, the cardiac muscle suffers a heart attack, and this leads to the death of the cells in that particular area.

Symptoms are similar to angina, but they can be more intense and lasting.

Call 911 immediately to allow trained emergency staff to:

- **arrive quickly and start treatment**
- **send information to the hospital before the patient arrives effectively**
- **treat a potential cardiac arrest**

Alternatively refer to the closest emergency room as soon as possible.

This type of heart attack leaves irreversible damages and its severity depends on the amount of affected muscle area, which will no longer function as before. However, the heart is a tenacious organ. Even if part of it is damaged, the remaining portion continues to function. It just needs time to settle and reduce its activity and stress for a while. A good lifestyle and social relations can usually be resumed after one month.

Risk factors and prevention of atherosclerosis.
There are some lifestyles that increase the possibility of atherosclerotic

plaque formation. These behaviors can (and must) be modified by everyone, even by people who have never suffered a heart disease. These behaviors must be modified:

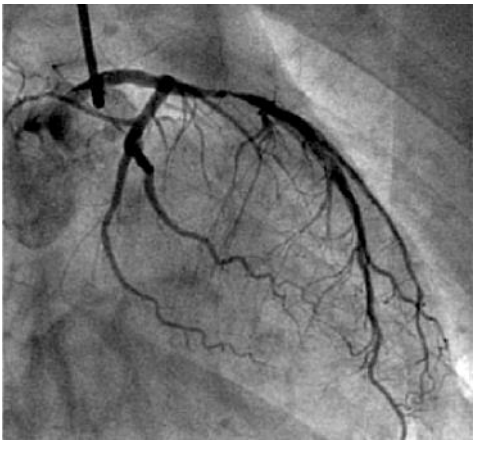
- **Smoking**
- **Fat-rich diet**
- **Sedentary lifestyle**
- **Stress and anxiety**

These behaviors favor the onset of conditions known as risk factors, such as arterial hypertension, hypercholesterolemia, obesity and diabetes mellitus that increase the likelihood of suffering a heart disease.

CORONAROGRAPHY

This is one of the most accurate tests to diagnose a coronary disease, because it highlights its location and severity. It involves catheterization, i.e. introducing a **catheter** to inject a **contrast medium** in the coronary arteries. The test allows to visualize the partially or totally obstructed coronary arteries. This test is safe and minimally invasive.
Generally it is prescribed when there is a strongly suspected coronary artery disease or when other non-invasive tests such as EKG, stress test or echocardiogram have turned out positive.

Preparation
The doctor will collect the patient's medical history before the test. Some medicines, such as anticoagulants or antiaggregants, may be suspended. The test is performed on an empty stomach.



Procedure
An intravenous needle is inserted in the patient's arm: this may be used to administer sedatives or other drugs during the test. Electrodes are placed on the patient's body to monitor his or her heart functions.

After disinfecting and anesthetizing the affected part with a local anesthetic, the physician inserts the catheter in the upper thigh, the inguinal region or arm. Then the catheter is gradually guided up to the heart. When it reaches the coronary arteries, the contrast agent is injected and the patient may experience a feeling of heat for about 10 seconds. The images on the monitor will show the conditions of the coronary arteries. Where the obstruction or narrowing is present, a shadow will become visible, caused by the absence of the contrast medium. After the catheter is removed. The test takes from 20 to 30 minutes to complete.

After the test

The patient must stay in bed for a few hours. At this stage it is advisable to drink a lot of water. After the test it is advisable to avoid efforts or sexual activity for a few days. The area used for catheter insertion should be checked for the next few days to avoid minor bleeding.

Possible risks

Coronary complications are rare (not more than 3% of cases) and may occur with:

- Bleeding from the catheter insertion site.
- Arrhythmias
- Heart attack.

Keep in mind that the test gives precise indications on how to continue the treatment.

CORONARY ANGIOPLASTY

This is a therapeutic intervention for coronary artery disease based on coronary catheterization. It consists in mechanically expanding the obstructed coronary artery to normalize the blood flow in that vessel. Angioplasty is not always possible, as a high number and relevance of obstructions may pose an indication for heart surgery.

During an angioplasty a catheter with a balloon on its tip, hence the definition of “balloon angioplasty”, is inserted in the obstructed artery and then inflated.

The purpose of the balloon is to:

- push the plaque against the arterial walls expanding the space necessary for the blood flow
- create cracks or “small fractures” in the plaque
- stretch the arteries for an improved blood flow

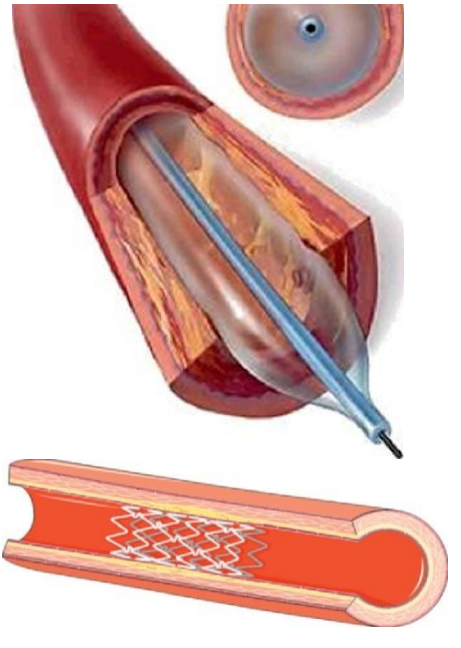
Procedure

Angioplasty is a relatively fast procedure, which lasts about one or two hours, and is performed in a cardiac catheterization laboratory. However, patients are asked to spend one night at the hospital to be monitored and are discharged the following day.

Before undergoing this procedure the patient must discuss his or her medical history with the physician and share the list of medications he or she is taking. Some pharmacological treatments may be discontinued or reduced. Diabetic patients should consult their doctor for food and insulin intake, as patients are usually asked to be on an empty stomach from midnight the night before the procedure.

On the day of the procedure the patient is taken to the sterile room in the catheterization laboratory. Usually the balloon catheter is inserted in the groin or in the outer surface of the wrist. In any case, the area is cleaned, shaved, disinfected and anesthetized. The catheter is introduced from that point and gradually guided to the heart.

The operation is displayed on a monitor. Once the catheter is introduced an X-ray of the coronary arteries is performed. When the catheter reaches the affected area, the balloon is inflated and left in position for a certain number of seconds or for a few minutes. The procedure can be repeated.

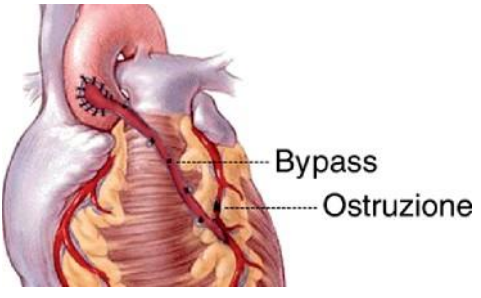


A tiny mesh-metal tube (stent) can be inserted to keep the vessel open. To prevent thrombosis and a new heart attack in this area, it is essential to take two antiaggregants (aspirin plus clopidogrel, prasugrel or ticagrelor) for a variable period of time according to the type of stent.

AORTIC ARTERY BYPASS SURGERY

This intervention allows to divert the blood flow when, due to the obstruction, its circulation in a coronary artery is prevented. In order to carry out this "deviation" a segment of blood vessel is taken from another part of the body. This segment can be procured from:

- the saphenous vein of the leg
- an artery of the chest wall
- an artery of the (radial) arm or stomach



The bypass is a low-risk intervention and complications are very rare. This intervention can significantly improve the clinical picture even in very seriously ill patients. Bypass is therefore a decisive surgical therapy for the treatment of coronary diseases, which often leaves no other alternatives and that should be considered for its very favorable risk/benefit ratio. From midnight before the procedure the patient must be fasting and avoid drinking. In the days prior to the procedure several tests are performed such as X-ray, urine analysis, ECG and some medications are administered. The chest, groin and legs are shaved and disinfected. The patient is treated with intravenous drugs.

In the operating room, the patient is anesthetized and a catheter introduced in the jugular vein up to the pulmonary artery (which goes from the heart to the lungs) to measure the function and the pressure of the heart and lung. It is also used to administer medications. A urinary catheter is inserted to monitor the urine output.

The procedure is carried out with a **heart-lung machine** for extra-corporeal circulation, an essential device considering that the heart is usually stopped during the bypass operation.

In this situation the surgeon can easily operate and build a bridge (bypass) on the obstructed coronary segment with a vessel segment taken from elsewhere. Frequently the surgeon can perform 5 or 6 of these bypasses to restore normal coronary circulation.

After the surgery

After surgery, the patient is taken to a post-operative intensive care unit, where the patient's blood pressure and pulse are continuously monitored for 12-24 hours. The patient is weaned off artificial respiration and intensive care provided as needed.
The patient can receive family visits in a controlled manner. The necessary drugs are administered intravenously. The endotracheal tube is not removed until the doctor says this is appropriate, and the patient is able to breathe normally.
The most common symptoms immediately after surgery are weakness and fatigue; the incision site can be painful. Pain medications are administered if necessary. Irregular heartbeat (arrhythmias) may occur in the days following surgery, but they should disappear with time. For a few weeks after the procedure the patient may experience pain at the chest and legs (the areas where the incision was made).
The patient remains in the hospital for a few days to perform a series of tests.
Normally, a cardiac rehabilitation program is recommended after discharge.

The following complications may occur after a bypass surgery:

- Difficulty breathing
- Bleeding
- Infections
- Hypertension
- Arrhythmias

Other disorders may also occur, including:

- Loss of appetite
  Swelling in the area where the saphenous vein segment was procured.
  Difficulty sleeping
- Constipation
- Mood swinging, depression.
- Muscle soreness
- Slight disorientation
- Minor memory loss
- Difficulty concentrating
- Fatigue

Many of these disorders are overcome within 4-6 weeks.

The greatest risk is the possibility of another heart attack or infarction, especially in case of elderly, diabetic or sick patients who have already undergone bypass surgery.

A few tips

The main thing a patient should do after surgery is to take care of him of herself.

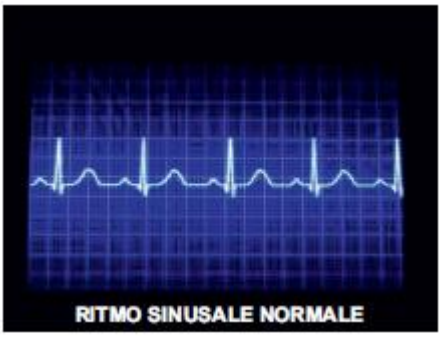
It is very important to:

- follow a healthy diet
- quit smoking
- monitor the blood pressure
- take the prescribed medications
  exercise regularly (walking is recommended)
- learn how to manage and control stress
  For the first months after the intervention, gradually resume your activities, make no physical efforts and avoid stressful situations.

Those who work at an office may resume their job after about 4-6 weeks.

ARRHYTHMIAS

Arrhythmia is an irregular heartbeat of the heart due to changes, deviations or malfunctions in the electrical pulse formation and conduction system. Under normal conditions the heart rate is regulated by the so-called "sinus node", a group of cells that generate the electrical activity of the entire heart muscle.



Based on nervous stimuli, the sinus node regulates the frequency of the beat according to metabolic needs (slowing down the beat in rest conditions or sleep; accelerating in situations of physical exercise, emotional tension, fever).

The pulse is propagated to the atria and, through the atrioventricular node and the bundle of His (specialized conduction tissue), to the ventricles that respond to the electrical activation with a mechanical contraction, the mechanism that generates blood circulation in the whole body. Therefore,

an adequate heart rhythm is essential for the physiological cardiocirculatory function.

Any situation where the pulse is not generated at an appropriate frequency, or is not propagated, or is generated irregularly or too rapidly, is referred to as "arrhythmia". This involves a more or less marked decrease in the amount of blood pushed to the peripheral areas and creates a pathological situation of variable severity.

Some arrhythmias indicate other heart problems, others do not.
An arrhythmia may be short and imperceptible, but can also be very severe.

Sudden rhythm accelerations and palpitations may occur quite commonly in the general population, but in most cases these are not clinically significant. However, it is always good idea to check out the causes for this.
Arrhythmias are classified according to the region of the heart where they are located and how they occur.

Main types of arrhythmias

Bradycardia
These arrhythmias slow down the heartbeat. They include:

- **Sinus bradycardia** located where the electrical stimulation to the entire heart originates.
- Sinus node dysfunction (brady/tachycardias syndrome). This is characterized by a variable speed of the beats, either too slow or too fast.
- **Atrial Ventricular (AV) block**. The passage of the electrical impulse from the atrium to the ventricle is strongly slowed or blocked. The block can be of grade I, Il, III.
- **Bundle branch block** This is a phenomenon caused by the slowing down of the electrical signal propagation through the branches to the ventricles. This alone does not decrease the heart activity, but it may be a sign of a more serious evolution.

TACHYCARDIA

This is a serious rhythm disorder during which the heart suddenly accelerates at 150 to 250 beats per minute, resulting in an impairment of the heart function. Tachycardia may be supraventricular or ventricular. The latter type of tachycardia is usually more severe and arises in the presence of a heart disease.

For this reason, this rhythm disorder requires rapid termination. Similarly, in patients suffering from this type of rhythm disorder, it is very important that effective therapeutic measures are taken to prevent relapse.

Fibrillation
Atrial fibrillation is an annoying arrhythmia, resulting in irregular heartbeat. Above all, it can cause episodes of cerebrovascular embolism, which is why patients with chronic atrial fibrillation must be treated also with anticoagulants. A return to normal sinus rhythm can occur with medications or with an electric shock.

On the other hand, ventricular fibrillation is a very serious arrhythmia that leads to immediate cardiac arrest because the heart muscle completely loses its ability to contract.

Main symptoms
Due to the wide variety of arrhythmias, symptoms can also vary from subject to subject. Sometimes symptoms can be totally non-existent. The main symptoms include:

- Palpitations
- Irregular beats
- Dizziness
- Fatigue
- Fainting
  Chest pain
- Dyspnea (shortness of breath or irregular breath)

Living conditions
In many cases, arrhythmias can be controlled allowing the person to lead a normal life. However these must be monitored by a doctor on a continuous basis.

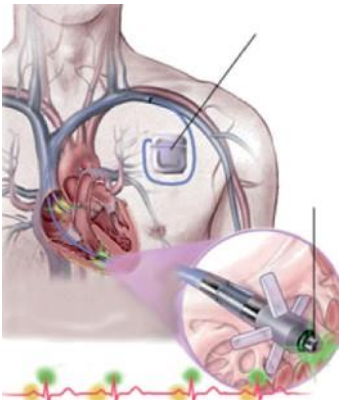
It is important that patients suffering from rhythm disorders are sent to a

specialized center to perform all the necessary tests and establish an appropriate therapy.

Medications
The utilized drugs belong to different categories depending on the type of arrhythmia.

The following are the most commonly used:
- Antiarrhythmic drugs
- Beta blockers
- Calcium channel blockers

PACEMAKER



This device is inserted in the chest to regulate or stimulate the heart rhythm, particularly modifying the bradycardia (slow beat) generated by arrhythmias like sinus node dysfunction or atrial-ventricular blocks. Every time one of these malfunctions causes a more or less severe slowing down of the beats, the pacemaker delivers stimuli that steer the heart to a physiological rhythm.
Today, "double chamber" pacemakers are used. These can stimulate both chambers and achieve a better synchronization of the contractions of the atria and ventricles.

Surgery

Inserting a permanent pacemaker in the chest requires a minor surgery, which can be performed in an electrophysiology laboratory. The patient receives local anesthesia and is continuously monitored during the procedure. A subclavicular incision (just above the chest) is performed to allow the electrodes to enter a venous vessel and reach the atrium and the ventricle. The electrodes are attached to the cardiac surface.

The main body of the pacemaker (generator) is placed in a surgical pocket created near the subclavicular incision. The incision is closed with a suture.

After the surgery
Checks are carried out to assess the proper positioning or functioning.

Several tests are performed to find the perfect adjustment, which can be done from the outside with a magnetic device. The patient does not have to worry about initial stiffness or minor pain in the incision area.
These symptoms will gradually disappear and slowly the patient will be able to resume his or her normal everyday activities. Heavy and excessive efforts should be avoided. The first follow-up visit is scheduled after approximately two months, and then every 6-12 months.

Complications
These are very rare and include surgical pocket infection, catheter displacement or their rupture.

Interference with other equipment
Metal detector: pacemaker carriers must exhibit a document to avoid going through metal detectors at airports.
MRI: Pacemaker carriers should avoid this test which interferes with the device. Some more recent models however are compatible with the MRI.
Mobile phones: It is advised to keep them away from the chest, even if no interference has been demonstrated.
High electrical fields: pacemaker carriers should avoid them.

Duration
The life of a generator with lithium batteries can reach 10 years, depending on how many times the pacemaker has come into operation. The low level of the batteries is indicated by a reminder detected by the physician on a normal visit.

IMPLANTABLE DEFIBRILLATOR

This device is inserted in the chest to monitor and correct episodes of severe tachycardia and fibrillation occurring when many cells send electric impulses that overlap with the main impulse. The defibrillator has two functions:

when the heart dangerously accelerates its beats, generating an uncontrolled tachycardia the defibrillator sends small electric shocks that stop the beat for a very short time in order to end the pathological rhythm. Soon after, the heart resumes its normal rhythm. This is called

cardioversion.

The second function is started in the case of a **ventricular fibrillation**, which generates a type of cardiac tremor that is completely unable to guarantee the blood flow and that leads to death. In this case, the defibrillator sends a stronger shock compared to the previous case, which stops the phenomenon and helps restarting a regular beat. This type of intervention is the actual **defibrillation**.

When is it used?
The main use is of course intended for patients suffering sustained forms of ventricular tachycardia or who have already had a cardiac arrest. The implantable defibrillator allows these patients to be less scared in case of tachycardia episodes and have increased survival opportunities. The defibrillator is also useful for patients with previous heart attacks and various forms of cardiomyopathy. However not all patients with tachycardia need this device.

Surgery
The defibrillator implant requires a minor surgery that can be performed in an electrophysiology laboratory. The defibrillator is inserted performing an incision in the chest under the clavicle. The filaments with the electrodes pass into a vein and reach the surface of the heart. The tail is connected to a small appliance that is inserted into the tissues.

The shock goes from the generator to the electrodes and then to the heart. Physicians test the device repeatedly to ensure it responds appropriately. The patient, under anesthesia, will not feel anything during the surgery. Normally a short hospitalization is required for this operation. The patient need not worry about a feeling of stiffness or pain in the implant area, which will soon disappear. Return to normal life is gradual but no heavy efforts or vigorous actions must be made. Shortness of breath, dizziness, palpitations or chest pain rarely occurs.

Precautions for defibrillator carriers
Patients are given a fact sheet on the device to always carry with them. This way, anyone who has to intervene has the necessary information. In addition, violent chest contacts with persons or objects should be avoided and no magnets kept in the vicinity of the implant. Defibrillator carriers must exhibit a document to avoid going through metal detectors at airports. A

defibrillator may stop operating during MRI. As a precaution, mobile phones should not be kept close to the system.

Duration
The life of lithium batteries is about 4-7 years, however it really depends on the number of shocks. When battery charge begins to reduce, an indicator is activated and detected by the doctor during a regular visit. Some devices transmit data remotely.

CARDIAC DECOMPENSATION

This is a pathological condition occurring when the heart cannot pump enough blood in the various districts, thus depriving them of oxygen. Stagnation or blood reflux In the lungs can cause a kind of "congestion" resulting in shortness of breath. Due to a lack of sufficient pump, the blood tends to stagnate also in the limbs (feet and legs) causing a swelling (edemas) therefore the disease is called "congestive heart failure".

Causes and consequences

The causes of decompensation are pathological conditions affecting the cardiovascular system:

- Coronary ischemia
- Hypertension
- Cardiomyopathy (heart muscle disease)
- Some congenital heart defects

However, heart decompensation may occur even without these conditions. This is a non-physiological aging of the heart.

The main consequences are:

Dilation of the cardiac cavity, particularly of the left ventricle.
Hypertrophy of the heart walls with poor contraction capacity.

- Some kidney dysfunctions.

Risk factors:

- Smoking
- Obesity
- Sedentary life
- Hypertension
- Sodium-rich diet

Types of decompensation and symptoms

Left ventricular failure. Blood pumping performed by the left ventricle is inadequate. The amount of circulating blood is reduced and pumping is insufficient. The main symptoms include:

- Shortness of breath at rest or under exertion.
- Cough/dry mouth.
- Swelling of the feet and legs (edema).
- Palpitations

Right side (pulmonary heart) decompensation: In this case the right ventricle does not work. Alterations in the pulmonary circulation resulting from chronic bronchopathy can lead to pulmonary hypertension.

Decompensation can have different levels of severity. The New York Heart Association (NYHA) has identified four classes of loss of heart functional capacity:

Class I: No objective symptoms and no limitation of ordinary physical activity.
Class II: Some symptoms during normal physical activity (shortness of breath and/or fatigue)..
Class III: Presence of breathlessness and/or fatigue during a moderate activity.
Class IV: Presence of breathlessness and/or fatigue even at rest.

Diagnosis

Main tests for the diagnosis of heart decompensation:

- Blood tests
- Chest x-ray
- Stress test
- Echocardiogram

When an even mild heart failure is diagnosed, the diet must be changed and appropriate daily behaviors adopted.

Sodium

Sodium retains water in the vessels, increasing the volume of circulating fluids with a consequent increase of the heart stress. Under conditions of decompensation, the increased circulating fluid is particularly harmful and one of the causes of swelling in the feet and legs. Sodium should therefore

be removed or reduced as much as possible from the diet. Of course the main intake of sodium is given by the salt, which should be replaced with herbs and flavors to season foods. Salt is also highly contained in cured meats, cold cuts and smoked products, some fish (anchovies, herring) and almost all preserved products.

Alcohol
Alcohol consumption should be minimized, as high levels of alcohol can cause different heart disorders and are associated with an increased risk of stroke.

Weight and exercise
Being overweight increases the heart's work. This creates a condition of continuous stress, which is very harmful for a decompensated heart.
Weight must be reduced with diet and exercise, to be arranged with your doctor. Many people with decompensation report they feel better with regular exercise.
However, in view of the fact that physical activity increases the heart's work, you must discuss with your doctor what to do and only perform moderate efforts.

Normally, the recommended low aerobic-impact activities, i.e. with low oxygen consumption, are:

- Walking
- Swimming
- Cycling

Finally, body weight should be checked daily and written down on a calendar. If your weight increases contact your GP to increase the dosage of your diuretic.

Lifestyle hints
Patients with heart decompensation should follow some recommendations:

- Perform only the physical activity recommended by your doctor.
  Avoid contact with persons with a cold or flu.
  Moderate your daily work and other activities (sports, entertainment, holidays, travel, and sexual activity) and discuss them with your doctor.
  Involve your family members. Relatives can provide physical and psychological support and help in adopting a new lifestyle.

Family members can remind to take medicines, prepare a proper diet, join in with the physical activity, find new information on the disease, and avoid unnecessary stress to the patient.