

# **LIFE MUST GO ON!**

Informative report for patients awaiting and with kidney transplantation.

## **1 - INTRODUCTION**

Your kidneys no longer work properly: in order to be healthy again a kidney transplant was suggested. Every patient is hoping to be eligible for a transplant but obviously they are also concerned about it. Kidney transplantation is currently the best therapy to rehabilitate patients with kidney failure. Every day around the world the kidney transplant allows seriously ill people to start a new and active life. Nowadays the chances of kidney transplantation success have remarkably increased: thank to continuous progresses on immunosuppressive therapy and surgical techniques, almost every transplanted patient can hope to have a fully functioning kidney for several years.

This guide is designed to help the patient during this important stage of your life along with the information provided by your doctor. In here you will find the answers to many questions, but if you have other questions, you can request more explanations.

We wish our patients to become fully aware of their own kidneys: it will be of great help to their doctors and their nurses who will assist them.

## 2 - KIDNEY

Human beings have two kidneys located posteriorly. The kidneys are like filters in the human body: the kidneys clean the blood which comes through the renal arteries and clean up toxic waste, such as urea and creatinine. Our diet contains different types of salts and minerals essential for good health. But not all the amount of salts and minerals introduced is required by the body and it is the task of the kidneys to eliminate the superfluous quantity with urine.

Other important kidneys functions:

- produce hormones that regulate blood pressure
- produce erythropoietin (a hormone that stimulates the bone marrow to produce red blood cells, which are essential for oxygen transport)
- produce vitamin D, important for healthy bones.

## 3 - KIDNEY FAILURE

Chronic kidney failure is a progressive condition during which the kidneys are irreversibly damaged. There are two types of kidney failure:

- the **acute** kidney failure in which the kidneys may stop working for a short period of time and then resume, in part or completely, their activity. It can arise from a sudden illness.
- the **chronic** kidney failure is a progressive condition in which the kidneys are irreversibly damaged over a considerable period of time, often years. This condition can arise from an infection, an immune system disease, diabetes, hypertension or from genetic disease. The advanced chronic kidney failure represents the final stage of kidney disease which means that kidneys completely lose their function.

[ILLUSTRATION N. 1]

### KIDNEY FAILURE SYMPTOMS

Many people report feeling weak, easily tired and not very active. Their appetite decreases and food has a strange taste.

Other typical signs of kidney failure are:

- itch
- decrease in the amount of urine or need to urinate during the night
- yellow-gray skin and ease of bruising
- reduction in sexual activity
- swollen ankles and legs
- shortness of breath
- chest pains
- cramps and muscles contracture.

When the kidneys do not work properly, treatments such as hemodialysis or peritoneal dialysis can filter and remove part of the toxic substances from the body. Nevertheless, dialysis can not perform many of the other vital functions as, for instance, stimulation of red blood cells production: this is why only a kidney transplant can cure your disease.

## 4 - KIDNEY TRANSPLANTATION

In need for a patient to a new kidney, after some examinations and visits to determine the suitability for transplantation, the patient's name and their data are included in the waiting list of the Transplant Center of Varese. This Center is part of the NITp (Northern Italy Transplant program). The average waiting time between placing on the list and the transplant is within 1 and 2 years, but it can vary depending on the availability of donors and the compatibility between donor and the recipient.

**During this period it is necessary to stop smoking, lose weight in the event of overweight and care for the oral hygiene with the support of the dentist.**

### PREPARE YOURSELF FOR HOSPITALIZATION

**During the waiting time it is indispensable to be always available.** It is also necessary to provide your dialysis center a telephone numbers list and to inform the doctors of possible movement. You have to bring your phone with you and keep it on. You must remember that the availability of a kidney is signaled with a less than 12 hours notice: for this reason is best to keep a suitcase packed with all the necessary, especially if you live outside Varese.

### AFTER THE PHONE CALL

When an organ is available, the patient is contacted by your nephrologist and receives all the information on what needs to be done in the following hours. You must not eat, drink nor take drugs other than those that will eventually be prescribed. Any symptoms – cold, cough, fever or other – must be reported immediately to the nephrologist. Special precautions may be needed or it may be necessary to assign the organ, without losing time, to another patient.

### PREPARATION FOR SURGERY

Verified the absence of contraindications, you should go to the Hospital (home of the Dialysis Centre or home of the Transplant Centre: it will be given information) where you will run a series of tests that serves as a pre-operative assessment and further eligibility for the transplant. Before surgery there will be a meeting with the surgeon and the anesthesiologist who will explain the procedure and the risks connected with it. Will then be asked to sign an informed consent to the procedure, to any blood transfusions and any participation in clinical trials. In case you have also signed the agreement for the acceptance of organs at risk "non-standard" and became available an organ donor with this characteristics, you will need to re-sign the specific content before surgery.

### SURGERY

The surgery lasts three hours. Your kidneys are not usually removed and your new kidney is placed on the right or left, in the lower abdomen. The new kidney is in a surface position so that it can be easily palpated and, if necessary, biopsy.

### POST-SURGERY PERIOD

Awakening from anesthesia, you will find:

- intravenous infusions, as is usual after surgical interventions, for the administration of anti-rejection drugs, antibiotics, diuretics, etc.
- bladder catheter to ensure urine collection; must be maintained for the first days as the quantity and color of your urine will be monitored frequently  
[ILLUSTRATION N.2]
- a scar around 20 cm in length and one or more drainages on your hip
- nasogastric tube to collect gastric juice and let the digestive tract rest, the tube will be removed after 24 hours.

In order to check that the kidney runs properly and that it is well vascularized, ultrasound examination will be performed in the post-surgery period.

## **KIDNEY BIOPSIES**

The transplant team may find necessary to take a sample of tissue from the new kidney. This procedure is called biopsy and usually is performed to monitor the rejection reaction or other alterations. It is done inpatient: under local anesthesia, a sample of kidney tissue is extracted with a thin needle and it is then examined under a microscope. After this examination is necessary that the patient remains in bed for at least eight hours.

## **EARLY SURGICAL COMPLICATIONS**

They may have a surgical origin: bruises, vascular thrombosis, serum pool, urine leakage or they could be infectious complications. In some cases it may be necessary to re-operate surgically. The kidney working may not be immediate, for instance for a suffering of the organ in the hours between the taking from the donor and the transplantation in the recipient. This complication generally is spontaneously reversible and rarely extends over two or three weeks: during this period dialysis is essential.

## **REJECTION**

The body may produce antibodies against the transplanted organ, which is recognized as **foreign**: this cause the phenomenon of **“rejection”**, which ends with the loss of the organ function and sometimes even with its destruction if not treated. This rejection reactions can occur at any time after the transplant, however they occur most frequently in the initial periods.

## **CHECK UP**

If the post-surgery period has not complications, the hospital stay will be between 12 and 20 days. At discharge, the patient will be automatically taken over from the Transplant Surgery doctor's office, to which you will address later for any need. Initially outpatient visits are frequent and, in any medical supervision, will run blood and urine tests, followed by medical examination. Will run even radiological and instrumental controls to the clinical needs.

### **Pay attention:**

- do not take the anti-rejection drugs before the blood test because it would change the examinations result
- at every check up carry with you the drugs list in order to annotate therapeutic changes.

## **5 - LATE SURGICAL COMPLICATIONS**

### **REJECTION**

The immunosuppressive drugs prevent that the immune system rejects the kidney. In most cases these episodes are controlled simply by increasing the doses of the drugs that you already assume.

#### **REJECTION SYMPTOMS**

**Often disorders are few and generic, as a reduction in well-being, a slight fever and weakness. However, some signs are clearer and you will need to lend particular attention:**

- increase in body weight in 24 hours
- swelling of the feet and ankles
- decrease in the amount of excreted in 24 hours
- increased blood pressure

- breathing difficulty even for minimal efforts
- pain or tightness level in the transplanted kidney
- 38 °C or more, especially in the morning.

You must immediately report these symptoms to the doctor at the Transplant Center. NO FEAR, more than 90% rejection episodes is controlled by drugs and your kidney will work properly. Very often hospitalization is not needed.

## INFECTIONS

**The transplanted patient is at increased risk of developing infections because of the need to take anti-rejection immunosuppressive therapy.** Some infections may be transmitted by the transplanted organ (infections of the donor), others are due to reactivation of infections by viruses or bacteria remained latent in the recipient (for instance, the reactivation of cytomegalovirus or varicella virus had in childhood), or be contracted by the patient after transplantation. After transplantation antibiotic prophylaxis will be initiated to prevent some serious infections, which is generally suspended after 3-6 months after transplantation. During scheduled visits will be made some simple tests (such as blood and urine tests) that will enable the doctors to monitor the occurrence of infections or reactivation and the consequent need to take an anti-infective therapy.

## DIABETES

Diabetes is an increase in the amount of sugar in the blood. Some of the drugs commonly used as immunosuppressant can cause diabetes. If you experience any of the following symptoms, you should inform you doctor at once:

- increased thirst
- increase in the amount of urine
- disturbed view, with spots
- state of confusion

If you have diabetes, you should undergo specialized care. In order to reduce sugar in the blood will be helpful to lose weight, follow a diet and get regular exercise. It also may be necessary to take drugs orally or insulin injections or adjustments of the immunosuppressive therapy.

## ARTERIAL HYPEREXTENSION

**Most of transplant patients must take drugs to control blood pressure.** Some changes in lifestyle can help reduce blood pressure and risk of cardiovascular disease:

- avoid the stress and rest as necessary
- reduce salt intake in the diet
- no smoking
- regularly do physical activity
- follow the diet that was prescribed and try not to put on weight.

## CANCER

All immunosuppressive drugs can, over time, increase the risk of developing cancer: especially lymphoma and skin cancer. The risk is still very low (less than 3%). As patients are subjected to regular visits and examinations instrumental control, changes in health are diagnosed early. Furthermore, the precautions to protect themselves from the sun reduce the chances of developing skin cancer. Abstain from smoking.

## NEUROLOGICAL COMPLICATIONS

**Some immunosuppressive drugs can trigger unwanted neurological reactions.** Ciclosporina and Tacrolimus can cause sleep disorder, such as insomnia, nightmares and sometimes hallucinations; other effects can include irritability and sudden mood changes. Some patients have difficulty concentrating or remembering.

May cause hand tremors or tingling in the hands or feet. These side effects are more often present in the post-surgery period because the drug doses are higher, and tend to regress till disappear with dose reduction.

## PSYCHIC ISSUES

Once the initial euphoria has passed, you may feel worried or depressed. Some people are afraid of becoming disabled or otherwise different from before; others live as inmates because frightened by the idea of being able to develop infections or are distressed by the possibility of returning to dialysis. Return to work or school, as well as the advice of doctors and nurses, is certainly useful.

## 6 - IMMUNOSUPPRESSIVE DRUGS

The purpose of the immunosuppressive treatment is, as we said, to prevent rejection occurrence. It takes place usually with the combination of different drugs that can be administered sequentially or simultaneously: some will have to be taken for life; others will be prescribed for short periods, or will be suspended after the transplant.

## INDUCTION THERAPY

BASILIXIMAB (SIMULECT®), TYMOGLOBULINE

They are always given together with other immunosuppressive drugs such as Ciclosporina and Corticosteroidi. **Side effects** include gastrointestinal problems such as diarrhea, vomiting and wound infections.

## MAINTENANCE THERAPY

CICLOSPORINA (SANDIMMUN®, NEORAL®), TACROLIMUS (PROGRAF®)

Ciclosporina and Tacrolimus are considered basic immunosuppressive drugs. This means that they constitute the main part of immunosuppressive therapy. Ciclosporina is usually administered orally, but in the days immediately following transplantation can be administered intravenously. The patient undergoes regular blood tests to monitor the blood levels and to prevent possible side effects.

The dose of Ciclosporina is calculated according to the body weight, the level of the drug in the blood, the clinical condition, the laboratory analysis and the presence of any side effects. You must take the medicine, unless otherwise required, twice a day, then every 12 hours, avoiding significant changes in time.

**On the day of check-up it will be necessary to take this medicine: only after 2 hours you can undergo the blood test. Remember to bring medicines with you, so you can take them immediately after the test.**

The capsules are to be swallowed with a liquid (except grapefruit juice) when removed from their packaging.

### Precaution:

Ciclosporina interacts with many commonly used drugs. You should always ask your doctor before you associate any drug.

Also the dose of Tacrolimus is calculated according to the weight, the concentration of the drug in the blood, the clinical condition, the results of laboratory tests and the presence of any side effect.

The total daily amount should be divided and taken in two doses 12 hours apart. You must remove the capsules from their boxes and swallow immediately with plenty of water. The capsules should be taken between meals, then at least one hour before or 2-3 hours later.

**On the day of check-up, do not take the dose of Tacrolimus till the blood test is ended. Remember to take with you the drug, so you can take it as soon as the blood test is done.**

### Precaution:

Tacrolimus can interact with certain medications often used. Consult your doctor before taking any medication, including over-the-counter drug that can be bought in pharmacies.

### Side effects

Side effect	Ciclosporina/Tacrolimus	What to do?
<b>Body hair</b>	+++	Discoloration or hair removal if it persists
<b>Gingival swelling</b>	+	Dental treatment
<b>High pressure</b>	+	Hypotensive drugs (prescribed by a doctor)
<b>Kidney toxicity</b>	+	Monitoring of the concentration of the drug
<b>Tremors</b>	+++	Report to the doctor
<b>Diabetes</b>	++	Change of strategy insulin

#### CORTICOSTEROIDS: PREDNISON, METILPREDNISOLONE (DETACORTENE®, URBASON®, MEDROL®)

Prednisone and Metilprednisolone are corticosteroids that are often administered for life at low doses to prevent rejection of transplanted organs; high doses for short period are required for the treatment of acute rejection. The corticosteroids are routinely prescribed together with a basic immunosuppressive agent, as Ciclosporina or Tacrolimus.

The dose of corticosteroids is calculated based on the weight, clinical condition and time elapsed after transplantation.

Swallow the tablets with meals if these are to be taken only once a day, you should take it in the morning with breakfast.

#### Side effects

Side effect	What to do?
<b>Weight gain and abnormal body fat distribution</b>	Diet lightly salted or sugared
<b>Edema (swelling)</b>	Lightly salted diet
<b>Heartburn</b>	Antacids or antiulcer
<b>Increased appetite</b>	Dietary advice
<b>Acne and pimples</b>	Dermatological therapy
<b>Anxiety, insomnia</b>	Anxiolytic drugs (prescribed by doctor)

The side effects in the long run include:

- brittle bones, muscles weakness
- weight gain and abnormal body fat distribution
- increased blood pressure
- thinning skin, easy bruising tendency
- gastrointestinal disorders such as ulcer and heartburn
- diabetes
- cataract
- appearance of acne and growth of facial hair.

The dose is calculated according to the weight, medical conditions and time elapsed after transplantation.

You can take the tablets at any time of the day, but you should get used to take medication at the same time.

#### MICOFENOLATO MOFETILE (CELL-CEPT®), ACIDO MICOFENOLICO (MYFORTIC®)

**These medications are dispensed directly from the Hospital during the visits.**

It is recommended to take these medicines on an empty stomach, at least 1 hour before and 2-3 hours after a meal.

#### Side effects:

- decrease in white blood cells
- decreased hemoglobin, resulting in the appearance of anemia



- hair loss
- fever
- joint pain
- impairment of liver function.

Some patients may experience nausea and diarrhea. These side effects usually disappear or decrease with the decrease in dosage.

#### RAPAMICINA (SIROLIMUS®, RAPAMUNE®)

It is very effective in preventing rejection without damaging the kidney itself. However, other **side effects** including cholesterol in the blood, decreased platelets, diarrhea, arthralgia and slowing wound healing.

#### EVEROLIMUS (CERTICAN®)

It has an action mechanism similar to Sirolimus and has so far been used in combination with Ciclosporina and Tacrolimus. It is in capsules and is taken together with Ciclosporina every 12 hours. **Side effects are similar to those of Sirolimus.**

The following rules must be applied for all the drugs:

- try to take medication every day at the same hour
- do not change or skip the dose of the drug, even if you feel better
- if you accidentally take more than the prescribed dose, contact your doctor immediately
- if you forget to take a dose, take it as soon as you remember
- always check the expiry date on the package
- do not assume over-the-counter drugs
- store medicines in a cool and dry place, away from light and keep them out of reach of children
- do not put the medicine in the refrigerator unless advised by your doctor or pharmacist
- always check that you have a sufficient drugs supply for weekends, holidays or, even more, when the dosage is increased.

#### PAY ATTENTION TO THE INTERACTIONS!

- consult your doctor of the Transplant Center before taking new drugs: many of them, such as antibiotics, interfere with the anti-rejection drugs increasing the risk of rejection or determining the occurrence of side effects
- avoid taking grapefruit both fresh and the one produced industrially, as it interacts with the absorption of some drugs, including Ciclosporina
- avoid taking products containing St. John's Wort (iperico) , or Erba di San Giovanni, for interactions with Ciclosporina and Tacrolimus
- pay attention to homeopathic and herbal remedies.

## 7 - HEALTH STANDARDS AFTER THE RESIGNATION

The medical and nursing staff of the Transplant Center takes care of patients steadily until the resignation. From that moment the transplanted patient is even more responsible for their own health, **remembering that the team of the Center is always at your disposal.**

### WOUND CARE

Keep clean the wound using an antiseptic soap. If you notice changes, such as redness, swelling or leak of liquids, you must inform your doctor immediately.

### CHECK YOUR TEMPERATURE

You should check the temperature every day for, at least, one month after discharge and at any time you feel the fever. It may be the first sign of infection or rejection. If the temperature rises above 38°C you must

contact the Transplant Center doctor. You do not have to take therapies unless prescribed by a physician experienced in the management of transplanted patients.

## **BLOOD PRESSURE AND PULSE RATE**

Nurse will teach you how to measure your blood pressure and pulse. It is very important to know the normal values of your blood pressure and pulse rate.

## **DIURESIS AND WEIGHT CONTROL**

The amount of urine that is produced every day is a key parameter to assess kidney function. In addition to measuring the amount of urine produced, you must also weight yourself daily (preferably in the morning, before breakfast). If there is a decrease in the amount of urine or the weight increases more than 1 Kg per day or 2 Kg per week, you should contact the medical team immediately. You also need to examine your own urine constantly. Often small amounts of blood appear immediately after the surgery; if the blood is still present after many days or you notice an unpleasant odor, you should inform your doctor.

[ILLUSTRATION N.3]

## **DENTAL CARE**

Brush your teeth immediately after meals and rinse your mouth with antiseptic mouthwash. If you bring a dentures, clean it immediately after each meal. It is important to undergo every six months a check to the dentist. In case of need for dental case, you should contact the Transplant Center for possible antibiotic prophylaxis.

## **HYGIENE FOR YOUR BODY**

It is important to follow a thorough cleaning to reduce the risk of infections.

Try to follow these guidelines:

- wash yourself regularly, paying particular attention to hand, as indicated below, and to intimate hygiene
- keep nails clean, using a brush
- do not use soap but liquid soap dispensed from a dispenser, do not recharge soap
- replace daily the towels used for personal hygiene and hands: this must obviously be personal
- during the menstrual period you have to change pads or tampons regularly because the blood is an ideal breeding ground for bacteria. You should not use the products for intimate hygiene: they contain disinfectants that can destroy microorganisms normally present in the vagina and thus increase the risk of infections. Regular washing with soap at neutral PH and water are enough.
- Treat your feet and use comfortable shoes.

## **SKIN AND HAIR CURE**

In the first months after transplantation is possible the appearance of small pimples on the face and trunk, similar to acne. In most cases the acne is the result of taking cortisone but has a limited duration: the doctor of the Transplant Center can possibly recommend a dermatological evaluation.

For the hygiene is appropriate to use mild detergents and keep the skin hydrated applying moisturizers.

Corticosteroids likely worsen the appearance of hair: dyes, perms and bleaching can make them brittle.

## **UNWANTED HAIR GROWTH**

One of the possible side effects of some immunosuppressive medications is the increased growth of facial hair. This can cause embarrassment to women and children. You can use a depilatory cream or lighten the hair with a solution of hydrogen peroxide. Also waxing and electrolysis are effective to remove unwanted hair. If their growth is excessive, contact your doctor for advice.

## EXPOSURE TO THE SUN

Too much sun can be dangerous for anyone. Patients with transplant are at high risk of skin cancer because their immune system is not able to repair the damages caused by ultraviolet rays. That is why you must always protect your skin from the sun following these simple rules:

- avoid sun exposure between 10 am and 15 pm, when the rays are more intense
- outdoor remember to wear a hat, long sleeves and long pants, unless you are protected by a sunscreen  
[ILLUSTRATION N.4]
- in the spring and in summer use a sunscreen with a high quality protective factor, at least 15. Apply it on all exposed parts, especially on the face, neck and hands
- remember that the sun's rays can cause damage even if the sky is cloudy. Ultraviolet rays are reflected from the sea, sand and snow
- do not go to a solarium.

The risk that a mole becomes malignant is high in transplanted patients. If you notice that a mole changes its color or its margins become irregular, contact your doctor at Transplant Center.

## HANDS-WASHING

Hands-washing is the easiest way to prevent infections.

You must do it every time:

- before you bring hands to mouth
- before and after meal
- before the oral therapy assumption  
[ILLUSTRATION N.5]
- before the hygienic care of the oral cavity
- after using the toilet
- after touching potential "dirty" objects (e.g. newspapers, money, shoes, work surface)
- before and after the diaper change if you have children
- after touching pets, handling their food or picking up their droppings
- after handling earth, plants or flowers
- after contact with respiratory secretions: for instance after blowing the nose, coughing, etc.

If it is not possible to wash your hands with soap and water, use an alcohol antiseptic gel for hand hygiene: it is recommended to carry it always with you.

**Wash your hands once more is better than one less.**

## ARTERIOVENOUS FISTULA

As the arteriovenous fistula for hemodialysis is no longer used, it may stop working. You must report your doctor if you see signs of redness, pain or increase in volume.

A few months after the transplant the fistula can be closed: this surgery can be an aesthetic improvement to the arm as well as reducing the workload of the heart.

## 8 - LIFE AFTER TRANSPLANTATION

Returning home after a transplant is always an exciting and happy moment, but this joy can be accompanied by anxiety or even depression in the early weeks. It is important to remember that recovery can take many weeks, even months to learn how to live with a transplanted kidney. Once this delicate period has passed, the transplanted patients are happy to resume an active life: they work, have children, have fun and even an active role in society.

## LIVING WITH FAMILY

No special precautions are necessary. If one of the family members notices cold symptoms, such as sore throat, cough or other, he will have to stay at least one meter away from the patient, not to cough or

sneeze in the presence of transplanted patient, use the surgical mask for extended and close contact (distance < 1 meter) in the same environment. He has to replace the mask whenever it is wet and let the house well-ventilated.

## **HOUSE ENVIRONMENT**

You must regularly clean the bathroom and the kitchen, especially the refrigerator. Special disinfectants are not needed, household cleaners are enough. The other rooms should be cleaned as usual and the linens changed regularly. It is recommended to ventilate the rooms daily. If you have an air-conditioning system is recommended to have it checked and perform the necessary maintenance. You have to eliminate any mold (wet rooms, water loss) on the walls, avoid to dwell in cellars unusually wet, possibly use a protective mask. Wash clothes and garments normally in the washing machine: there is no need to wash separately the clothes of the patient. Underwear and towels have to be washed with high temperatures programs (60°C).

## **OUTDOORS**

In the early post-surgery period you must avoid crowded and closed places as shopping malls, offices, public transport, bars, cinemas and theaters; if you go there, remember to always wear a mask.

We recommend to:

- always wear a mask when you come to hospital for checks
- avoid close contact (distance < 1 meter) with someone that has flu, cold or other infectious disease
- avoid, if possible, to dwell in proximity of construction sites or areas where there are excavations

## **PERSONAL HYGIENE**

You must care very much of your personal hygiene with particular regard to hand hygiene, intimate hygiene and oral cavity hygiene.

## **DIET AND NUTRITION**

[ILLUSTRATION N.6]

You need to follow a healthy and balanced diet.

Unfortunately one of the effects of cortisone is a strong increase in appetite. Weight gain is a problem for so many transplanted patients: it is necessary to follow a diet low in fat and sugar.

The diet should include fruits (some fruits like bananas contain a lot of potassium and therefore you should not exceed), vegetables, whole grains, bread, skimmed milk, dairy products and other calcium-rich foods, lean meat, fish, chicken and other sources of protein.

Other recommendations:

- weight yourself every day
- do not consume sweet snacks such as cakes or biscuits between the meals. If you are hungry, eat fruits and vegetables that introduce fewer calories
- try to drink about 2 liters of fluid per day. You can drink mineral water with low sodium, herbal tea or pasteurized skimmed milk
- some foods can cause infections and therefore patients with transplant must follow a few rules in the preparation and consumption of food
- you have to wash thoroughly your hands before cooking and preparing food
- peel or wash very carefully fruits and vegetables, especially vegetables; the thorough washing of fruits and vegetables is also recommended for products with peel or crust, organic foods and those pre-labeled as "taken"
- avoid unpasteurized dairy products (milk, cheese and yogurt unpasteurized), cheeses containing uncooked vegetables, cheese with mold (e.g. blue, stilton, Roquefort and gorgonzola), some soft cheeses (e.g. brie, feta, camembert)
- do not consume raw eggs or undercooked nor foods that may contain them (e.g. Dutch sauces or salad dressings, mayonnaise and homemade eggnog)

- do not eat raw or undercooked meat, including beef, poultry, pork, lamb, venison and other game, nor combined dishes containing raw or undercooked nor sweetbreads of these animals
- do not consume raw or undercooked shellfish (e.g. oysters)
- avoid raw vegetables sprouts
- do not drink water from sources not controlled
- do not consume food prepared at home and kept too long (canned fruits or vegetables, etc.); do not consume spoiled food or food after their deadline
- always use clean dishes and keep the kitchen clean. Also pay attention to the cleaning of work plans where you manipulate the foods
- use separate cutting boards or wash cutting boards with hot soapy water after use
- use any cooking method you want, keeping in mind that foods should be thoroughly cooked. If you use the microwave, the food must reach a point of cooking adequate and standard
- pay attention to herbs or herbal medicine (herbal teas, infusions, etc.)

## SALT (SODIUM)

It is necessary to limit the consumption of salt:

- using a little salt for cooking
- trying not to add more salt to the food already cooked
- not eat salty foods like chips
- avoiding canned foods

## POTASSIUM

Many patients with kidney failure have too potassium in the blood. After renal transplantation, most of the patients regain the normal balance of potassium. Yet, in some cases, the kidney may find it difficult to adjust the level, so it is better not to take potassium-rich foods, such as fruit juice, bananas and spinach.

**The consumption of alcohol and tobacco is strongly advised against.**

**Important: do not take Tacrolimus or Ciclosporina with grapefruit juice because it may increase the concentration of these drugs in the blood, with even side effects.**

[ILLUSTRATION N.7]

## PHISICAL ACTIVITY

It is definitely essential regular exercise. Subjects already trained can resume sports activity early. Remember though to start gently after a good warm up, without forcing and to increase the effort with progression.

Sports especially recommended are the walk, jogging, cycling, etc.

Sports that put at risk of serious injuries, such as boxing, rugby are thoroughly not recommended. Also rock climbing is not recommended because injuries have been reported to the transplanted kidney from harness and abseiling.

[ILLUSTRATION N.8]

## WORK

The psycho-physical rehabilitation is the main goal of the transplant. Passed the first three months after surgery you **must** return to work. For some jobs that may put the patient at increased risk of infection (close contact with the public, health care workers, veterinarians, farmers, etc.) it is good to discuss possible precautions with the doctor of the Center. You have to absent from work during the period of greater immunosuppression (the first months of post-surgery period and during anti-rejection treatments).

## DRIVING CAR

It is better not to drive the car in the first four weeks after transplantation.

## SEXUAL ACTIVITY

Sexual activity usual improves within a few months after transplantation and may be resumed as soon as you feel well enough. Most men regain sexual potency, although some men with serious vascular problems may remain powerless. Seek help from your doctor if you have any problem. As some immunosuppressive drugs can interfere with the effectiveness of oral contraceptives, it is better not to use the pill as contraceptive. Also intrauterine devices are not recommended because they may increase the risk of infections. The condom is the best way to prevent the infections and, when used concurrently with a spermicidal cream or foam, gives a good degree of contraception. The diaphragm is another possibility and women should refer to their gynecologist for this choice.

## FERTILITY

Many men have become fathers after kidney transplantation.

The majority of women have normal menstrual cycles again a few months after transplantation and a large number of women gave birth to healthy children. Women should talk to their doctor about the desire to create a family. Normally you **should wait at least a year before becoming pregnant**, so you can be treated during pregnancy, with a low dose of immunosuppressive drugs.

**If the patient is pregnant or breast feeding, immunosuppressive therapy should be re-evaluated by your doctor (for the potential risk run by the patient, the fetus or the child). Consult a doctor immediately in doubt of pregnancy.**

## HOLIDAY

Absences exceeding a few days are not recommended for the first few months after transplantation.

Contact your doctor if the journey will be long and remember to take along an adequate amount of tablets, keeping a small amount in your hand luggage, in case your luggage is lost or delivered late.

If the journey is very long and with large time zone differences, take the therapy at the times of the country where you are located, without calculating time differences.

Remember that some drugs are only available in hospital and not in all countries.

If you are traveling in countries with low health check, you need to take water from bottles, avoid ice and ingestion of water during the personal hygiene practices (shower, washing teeth, etc.).

Inquire about any preventive measures (precautions, prophylaxis, vaccinations, etc.) recommended to visit the country destination of the trip, contact the Clinic of Infectious Diseases Transplantation.

[ILLUSTRATION N.9]

## VACCINATION

During the pre-transplant visit the infectious disease specialist of the Transplant Center indicates which vaccinations are recommended for the patient in order to ensure greater security in the post-surgery period.

Each year the transplanted patient and life partners should undergo flu vaccine.

Other vaccinations should always be agreed with the expert in infectious disease of the Transplant Center.

## PETS

The common domestic animals (dogs and cats) can stay in the home of the patient, but it is good to be submitted in advance to a veterinary check. However you have to note the doctor if you have other pets that may be a source of infection (small rodents, parrots, pigeons, turtles, iguana, etc.).

During the first few months is better that the transplanted patient does not deal personally with pets litter or cage. After a few months you can do it, however you must always wear disposable gloves and wash your hands at the end of the procedure. It should be avoided the contact with animals that have diarrhea.

Report to the doctor of the Transplant Center any bites or scratches.

Avoid contact with the droppings of pigeons or other animals such as horses. Avoid getting into stables or perform work with manure; if it happens, remember to wear a mask, gloves and to wash hands after finishing work.

Avoid cleaning aquariums or in case you have to use gloves.

Avoid contact with reptiles, ducklings, chicks and exotic animals.

[ILLUSTRATION N.10]

## **GARDENING**

Always wear gloves when performing works of gardening and plant care. Wash hands thoroughly after finishing work.

Do not use fertilizers manure or manure equine.

## **HOBBY AND LIFE HABITS**

- do not smoke and avoid secondhand smoke; tobacco smoke increases the risk of bacterial and viral infections, while smoking marijuana increases the fungal one
- avoid to make tattoos or piercing after transplantation
- avoid entering caves (caving activities), especially if there are any droppings of bird or other animals
- avoid walking, swimming or playing in stagnant water (ponds, small lakes, rivers with little current) that may have been contaminated by sewage, human or animal waste
- it is allowed to swim in the sea and in the pool, but you should not swallow the water while swimming. In the case of abrasions during a bath, rinse with water not contaminated and disinfect the wound immediately
- do not attend thermal areas and avoid whirlpool, if left unchecked.

## **LIFE STANDARDS**

You will have to accept changes in your life, such as taking medications every day and go to the hospital for periodic examinations. However, most of the patients consider their quality of life very good and better than before.

## **GETTING IN TOUCH WITH MEDICAL CORPS**

This is your greatest responsibility!

It is essential to communicate with the nephrologist, surgeon, infectious disease specialist, family doctor, dentist and pharmacist. Make sure that all doctors know that you have a transplanted kidney and take drugs. Keep an accurate and updated record of your clinical conditions: blood pressure, pulse rate, urine output, body weight, any change of medications or dosages, infections and their treatment, new symptoms and side effects. Remember to bring all medical data when you go on vacation or if you are away from home for a more or less long period.

### **CONTACTS**

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Become a transplanted patient is a turning point in your life. Modern medicine has given to transplanted patients the opportunity to live a long and active life.

Take care of your kidney: it is a valuable asset.

## ATTACHMENT N.1

### PROPHYLAXIS OF INFECTIVE ENDOCARDITIS CIRCULATION 2007; 116:1736-1754

#### INTERVENTION ON ORAL CAVITY

**1 hour before** the procedure, Amoxicillina 2 g, through oral administration

In case of bloody intervention: you have to associate, **1 hour before** the procedure, Gentamicina 80 mg intramuscularly

Patients allergic to penicillin (only oral cavity and respiratory tract): you have to associate, **30 minutes before the procedure**, Clindamicina 600 mg orally and Claritromicina 0,5 through oral administration

#### RULES FOR PROCEDURES IN PATIENT WITH HIGH RISK, INCLUDING GASTROINTESTINAL OR GENITOURINE INTERVENTION

**30 minutes before** the procedure, Ampicillina: 2 g intramuscularly or intravenously + Gentamicina: 1.5 mg/kg intramuscularly or intravenously + Amoxicillina: 1.5 to take orally 6 hours after the intervention

**6 hours after** the procedure: Amoxicillina through oral administration

Patients allergic to penicillin: **1 hour before** the procedure, Vancomicina: 1 g intravenously + Gentamicina 1.5 mg/kg intramuscularly and intravenously

## ATTACHMENT N.2

### PRECAUTION OF SPECIAL CASES

The infectious pre-transplant exams allow to assess whether the patient has contracted or not certain infections. If you are negative for toxoplasma serology, you should also pay attention to avoid contracting it after transplantation. Therefore it is crucial that the patient seronegative for toxoplasma follow in strict compliance, event at home, the general rules of hygiene and food prophylaxis. Some precautions are those indicated previously for all transplant recipients.

#### FOOD HYGIENE STANDARDS FOR THE PREVENTION OF TOXOPLASMA GONDII INFECTION:

- do not eat raw or undercooked meat and cold cuts, adequately cook the meat (> 60°C)
- peel or wash fruits and vegetables very carefully before eating them, especially vegetables that may be contaminated with cat droppings (e.g. salad, strawberries, etc.)
- wash thoroughly utensils and work surfaces in the kitchen with soap, if they have been in contact with raw meat or other foods that may be contaminated
- do not drink water from uncontrolled sources (particularly in developing countries)
- avoid cleaning the cat litter or use disposable gloves, then wash immediately your hands. Change the sand litter every day
- wear gloves when gardening and for every contact with the ground which may be contaminated by cat excrements; wash your hands immediately after having removed gloves



- keep the cat in the house, do not approach stray animals. Feed the cat only with commercial dry and well cooked food

**For any questions or concerns, please contact the doctor at his Infectious Transplantation office.**