

YOU HAVE
TYPE 2
DIABETES:



MEANING and IMPLICATIONS



How to integrate diabetes into your life?

Diabetes is a life-long disease which can be treated, but—as yet—cannot be cured. Like other chronic diseases, its treatment depends on your day-to-day involvement. However, changing your habits is not an easy task. This may lead to non-adherence to diet, schedules, monitoring, or changes in treatment. In this brochure, we will discuss some of the most frequent difficulties you can face in following long-term treatment and possible ways of overcoming them.

A handwritten signature in black ink, appearing to read 'Aldo Maldonato', written in a cursive style.

Prof. Aldo Maldonato

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What is type 2 diabetes?

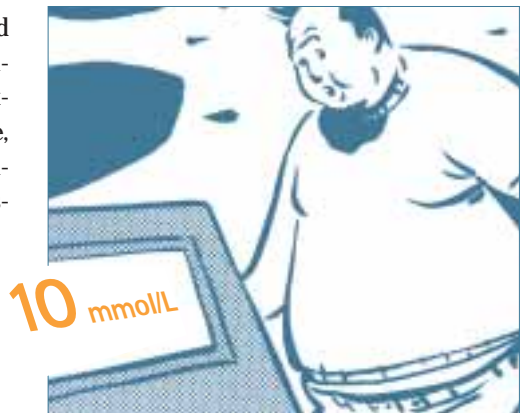
Diabetes is a disease in which there is too much sugar (glucose) in the blood. This situation is called hyperglycemia. Glucose is not a poison, but one of the main fuels of our body: however, persistent higher-than-normal levels induce faster aging and an earlier-than-normal risk of such complications as heart attack, stroke, kidney failure, blindness, foot lesions, etc... These complications are not a necessary feature of diabetes: they can be fully prevented if blood sugar levels are lowered and kept as close to normal as possible.

What is impaired in diabetes is the production of insulin, a substance which allows glucose to be utilized by various organs in the body. Unlike type 1 diabetes, in which insulin production is virtually absent, the cause of type 2 diabetes is an imbalance between the body's increased insulin need and its capacity to satisfy it. The main determinants of increased insulin need are an excess of body fat and sedentary habits. Hence, the most logical and efficient treatment involves reducing excess weight and exercising regularly. The use of tablets can also help when stimulation of insulin production and effectiveness are advised.

What are the symptoms of type 2 diabetes?

Unfortunately, diabetes is an insidious disease. In fact, moderately high levels of blood glucose (up to 10 to 11 mmol/L or 180 to 200 mg/dL) produce no symptoms and may persist unnoticed for months or years, while secretly doing harm.

Also, very high levels of blood glucose (constantly above 11 to 12 mmol/L or 200 to 220 mg/dL) only give mild symptoms, such as abundant urination and abnormal thirst, which may go unnoticed for years. Even when these symptoms continue, only weakness, cramps, and other minor disturbances may occur. This is why checking blood glucose levels frequently is vital.



How to integrate diabetes into your life?

Diabetes is a life-long disease which can be treated, but—as yet—cannot be cured. Like other chronic diseases, its treatment depends on your day-to-day involvement. However, changing your habits is not an easy task. This may lead to non-adherence to diet, schedules, monitoring, or changes in treatment. In this brochure, we will discuss some of the most frequent difficulties you can face in following long-term treatment and possible ways of overcoming them.

Changing habits, is it possible?

Habits are hard to change. If you are not convinced that given medical advice—eg, to lose weight—is really worthwhile for you, ask for further explanations. If you accept the advice, but feel that it is too tough for you, or you do not have enough time or willpower, openly express your fears to the doctor, nurse, or dietician. It is often possible to adjust a treatment schedule to special individual needs, or to obtain tips and tricks to adapt one's schedule to given treatment requirements.

Step-by-step progress

Just as mountain climbers may find it easier to focus their attention a few steps ahead rather than on a far summit, you may find it better to focus your efforts on a single, concrete, well-defined achievement (eg, lose 500 to 800 grams of body weight in 1 week or decrease peak blood glucose levels to below 200 mg/dL or 11.2 mmol/L), rather than continuously thinking of the final results for

your life-long treatment (eg, the ideal body weight or the ideal blood glucose levels).

Health diary

This may be an invaluable aid for you and your health professionals in the management of your diabetes. Regularly note any symptom and its characteristics (duration, severity, associated features, trigger factors, etc). Also note any relevant treatment changes (insulin or tablet dosage, diet, exercise), and try to highlight patterns of automatic response. Show it to the doctor, nurse, or dietician at each visit, and ask them to discuss any specific intervention on your part and its possible effects. For example discuss the type of treatment fits best with your lifestyle and is the easiest to remember. Do not consider it homework, but as a way to easily discuss your treatment.



What kind of changes are necessary now you have diabetes?

Anyone who has diabetes should try to correct a number of other conditions which often co-exist with diabetes, and which – like diabetes – bring about a higher-than-normal risk of cardiovascular accidents: ie, myocardial infarction or stroke.

Treating diabetes alone, without taking into account possible other cardiovascular risk factors, would be like leaving by car for a long journey and accurately checking only the petrol tank, without bothering with other checks, such as tire pressure or oil.

What are cardiovascular risk factors?

Cardiovascular risk factors are those well-known conditions - not necessarily diseases - that accelerate the development of cardiovascular complications, and thereby induce a statistical shortening of life expectancy. Seven such conditions are listed here:

1. diabetes, indicated by higher than normal blood glucose levels;
2. hypertension, indicated by elevated blood pressure in the arteries;
3. hyperlipemia, mainly indicated by higher than normal blood cholesterol levels;
4. overweight, indicated by fat accumulation in the waist region;
5. sedentary life, indicated by less than 30 minutes' moderate exercise per day;
6. tobacco smoking;
7. stressful life.

Having one or the other of these conditions or habits has been demonstrated to be associated with a greater than normal statistical risk of cardiovascular accidents at any age. What happens if an individual has more than one risk factor? It has been shown that unfortunately the resulting risk is not the simple sum of the single risks, but rather the effect of a multiplication factor. In other words, an individual with two risk factors, eg, diabetes and hypertension, will not have a double, but a triple risk.



Fortunately all risk factors can be corrected, and very often this can be done quite easily. The first three, ie, diabetes, hypertension and hyperlipemia – the diseases – cannot be cured yet, though they can be treated very effectively. Conditions and habits like overweight, sedentary life, and smoking, can be changed, provided one really wants to. A stressful life cannot always be changed, but at least some stress can be avoided, if one is motivated to do so.

If a risk factor is corrected, the cardiovascular risk associated with it disappears. A person with well-treated diabetes or hypertension is exactly like a person without diabetes or hypertension, just as an overweight person who loses excess fat can no longer be defined as “overweight.”

Therefore, correcting cardiovascular risk factors is possible, and it is really worthwhile because it reduces the risk of cardiovascular complications.

Why should you loose weight?

1. Excess weight – even a few kilograms, especially if stored in the abdominal region – increases the risk of developing type 2 diabetes, high blood pressure, and high cholesterol levels. Staying thin and physically fit can prevent these diseases.
2. People with type 2 diabetes, high blood pressure, high cholesterol, or any combination of these three diseases, weight reduction is the best possible treatment. Indeed, it is so effective – alone or in combination with daily exercise – that it can make the use of drugs unnecessary.

3. Overweight is a cardiovascular risk factor in itself. This means that, even in the absence of diabetes, hypertension, or high cholesterol, or when these diseases are effectively treated, losing weight can further increase your life expectancy.
4. Overweight causes a continuous strain on several joints, namely ankles, knees, hips, and the lumbar column, which can become worn out with time and cause pain and reduced mobility. Losing weight induces the same relief that you may experience when unloading a heavy backpack.
5. A large abdomen makes breathing more difficult. This is an additional reason why exercise becomes so unpleasant. Moreover, this difficulty in breathing may occasionally become dangerous when sleeping, and makes you more susceptible to respiratory tract infections and, in the long run, to chronic bronchitis and respiratory failure.



How can you loose weight?

Spread your day's food over three proper meals

1. Get off to a good start in the morning by having a hearty breakfast
2. Take a break at lunchtime to enjoy a full meal
3. In the evening, have a light meal
4. Make your first-choice foods:

- Vegetables and fruit
- Starches (bread, pasta, rice, potatoes, and pulses)

Cut down on:

- Hidden fats (meat, meat products, and cheese)

Moderate your use of:

- Fats (oils, butter, cream, and margarine) as seasonings and cooking aids
- Alcohol and soft drinks



King's breakfast



Rich man's lunch

Pauper's supper

5. Take regular exercise
6. Take a healthy snack (eg, a fruit, a yogurt, or a cereal bar) to keep hunger at bay in the afternoon and evening
7. Eat "snack foods" (pastries, biscuits, chocolate, or pork products) in small amounts and at infrequent intervals during the week
8. Allow yourself time, don't rush your food
9. Get used to leaving something on your plate



Why exercise?

Physical exercise is good for health and general well-being. In particular, it helps lower blood glucose levels, and can therefore be considered an excellent treatment for diabetes (especially type 2, non-insulin-dependent diabetes). Moreover, it helps you lose weight, when required, and, in doing so, supports this other cornerstone of the treatment of type 2 diabetes.

How to integrate physical exercise into your life?

How intense?

The intensity of the effort during exercise should be moderate: not too little or – most importantly – too much.

When you exercise, it is important to start slowly, and gradually reach a moderate, steady pace. How strenuous exercise should be may differ greatly between individuals, according to age, weight, previous training, and skill. Brisk walking at a speed of 4 to 5 km/hour is an example of an advisable effort after appropriate training for the majority of adults.



How long?

Regular exercise should be a life-long habit. The daily dose of exercise should be at least 1 hour, but may last much longer. In fact, there is no limitation to the duration of exercise, provided its intensity is light to moderate.

When?

Any time of the day is good. A smart solution is to include exercise in your daily routine, eg. going to work on foot or by bicycle.

If the daily dose of exercise is split into two or four segments, the beneficial effect is retained, and this type of program may be easier to continue in the long run.

What type of exercise?

The best choice is aerobic exercise that can be performed on a daily basis. A possible alternative is a sport that can be practiced with low to moderate effort, eg. bowling, golf, tennis, table tennis, cross-country skiing, bicycling on level ground, swimming, skating, rowing, dancing, or gym classes. If you have a problem using your legs, you should learn some kind of ex-

ercise that can be performed while sitting or lying, and progressively increase its duration up to half an hour, once or twice a day.

Please watch out for: If you are very obese people you should delay starting an exercise program until you have lost the first 3 kg.

Exercise may decrease blood sugar below normal levels (hypoglycemia), especially if you are taking drugs that lower blood glucose (tablets and/or insulin). Therefore, always carry sugar and other starchy foods when exercising, and be ready to take them as soon as you feel weak or “strange.” Ask your doctor’s advice on the possibility of reducing your drug dosage before entering a program of regular exercise.

It is, at any rate, better not to exercise when:

- you are sick;
- you feel any kind of pain, eg, in your chest, joints, or legs (if you feel pain when you are exercising, stop immediately and have a checkup before starting again);
- your blood glucose is persistently very high (above 17-20 mmol/L, or 300-350 mg/dL, exercise may worsen diabetes control);
- you feel tired;
- you feel breathless.

Why should you stop smoking?

Smoking is an independent cardiovascular risk factor, and should be stopped immediately, especially in the presence of one or

more additional risk factors such as diabetes or hypertension. Indeed, the risk of several coexisting factors is not simply the sum, but the product of the individual risks.

Discuss with your doctor the most optimal way for you to stop smoking.



How can my diabetes be treated?

Type 2 diabetes can be treated perfectly well, very often through lifestyle changes consisting of diet and exercise. For many people, however, changing habits is unfeasible or sometimes not effective. Fortunately, many drugs are available to help control blood glucose levels when diet and exercise are not accepted, or are ineffective.

What kind of treatments exist for treating type 2 diabetes?

If your doctor judges that diet and exercise are no longer sufficient for you, or too slow, to obtain a prompt decrease in blood glucose levels, he or she will prescribe you a drug.

Most likely the drug will be in form of tablets, to be taken once, twice, or three times a day, usually before meals. It is difficult, however, to predict which tablet the doctor will choose for you because many exist: in fact, more than 20 chemicals are available globally, and



each of them is commercialized under several different names. Some of them have been on the market for 50 years, whereas others are only a few years old. They each differ in many aspects: mechanism of action, dosage, duration, possible side effects, and price.

Considering your personal characteristics and those of your diabetes, the doctor will first offer you the drug that presumably best fits your needs. This choice will be confirmed after an initial trial, according to the results and the possible side effects.

How do diabetes tablets work?

Diabetes tablets are not insulin, but in different ways they improve the effect of the insulin your body is producing. Some stimulate a more consistent or prompter insulin production by your body; others make the body more sensitive to your own insulin (thus decreasing the net need for insulin production); others slow



down the intestinal absorption of nutrients (thus decreasing the glucose rise after meals and the need for a prompt insulin response). Some act by a combination of these mechanisms. Some of them have positive effects on circulation, independently of their effects on blood glucose.

Whatever their differences, it should be remembered that tablets are not insulin, and that if the body does not produce enough insulin they cannot be effective.

Which drugs are the best?

The best drug for you will be the most effective with the least side effects



Effectiveness is evaluated by blood glucose levels, which should be checked both before and after meals. Your doctor will establish your target blood glucose, which might be set at perfectly normal levels, or slightly higher according to your age and general condition.

Medicines that you only have to take once a day can help you to achieve your target blood glucose level.

Side effects are sometimes present, but are seldom serious. They are different for different drugs and include hypoglycemia (abnormally low blood glucose levels), gastric or intestinal problems, skin rashes, etc. Individual intolerance for one or another drug is possible.

Remember to read the sheet that comes along with your tablets or ask the doctor which side effects are most often associated with it. It is also very important that you report to your doctor any abnormality you may notice after starting the new drug.

How long should drugs be taken?

Once the right drug for you has been found, it should be taken regularly for a long time. In fact, the conditions that made it necessary to start the drug (eg, overweight and sedentary habits) are often long-lasting, and so is the need for the drug. Therefore, if a drug is effective you should keep taking it, and not stop it as if diabetes had been cured. Choosing a once daily drug may help you in taking it over a long period of time.

With time, conditions may change, and then the need for that drug should be reevaluated:

if abdominal fat has gone and you have started daily exercise, a drug may no longer be necessary, and you will be advised to try to stop taking it;

conversely, your insulin production may decrease so much as to make tablets ineffective. In that case, one or more daily insulin injections will be needed.



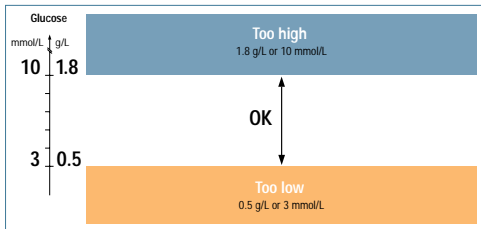
Insulin may be an important tool in treating your diabetes, and the hope is that in the near future it will be possible to take it by aerosol or by mouth.

What is hypoglycemia?

Diabetes is a disease in which there is too much sugar in the blood. Treatment lowers the quantity of blood sugar but sometimes its effect may be too strong and then there may not be enough sugar in the blood. This situation is called hypoglycemia: “hypo” for not enough; “glyc” for glucose (sugar); “emia” for blood. Therefore, hypoglycemia = not enough sugar in the blood. Such a situation must be avoided because it is responsible for unpleasant symptoms and signs, and can lead to accidents (at home, at work, in the car, etc). These accidents occur due to lack of concentration and attention, because low blood sugar interferes with the functioning of the brain.

What are the signs and symptoms of hypoglycemia?

- Sudden hunger
- Sudden mood change (irritability)
- Sudden tiredness
- Perspiration
- Blurred vision
- Paleness



- Difficulty concentrating
- Palpitations
- Sleepiness
- Rapid heart beats

Check which signs and symptoms you may have experienced when you had hypoglycemia. Ask your family which signs they saw and then try to compare each other’s description. Remember that some patients show very few signs of hypoglycemia (eg, elderly people and patients who have had diabetes for a long time) but they may have sudden character changes or may behave as if they were drunk.

What may lead to hypoglycemia?

1. Food: you have not eaten enough
 - You have not had enough food containing carbohydrates (bread, potatoes, pasta, rice, corn, fruit, etc).
 - You have skipped a meal.
2. Medication
 - You have taken medication but have not eaten.
 - Although hypoglycemia is less frequent in people taking medication (oral agents) than in people taking insulin, the danger of hypoglycemia still exists. If it is not treated promptly, your hypoglycemia may last a long time. Different drugs have different risks of hypoglycemia.
 - If you are taking insulin you must eat carbohydrate. Skipping meals, or eating meals not containing
 - carbohydrate, must be avoided when taking insulin.



3. Excess physical activity

- Exercise lowers the blood sugar because your muscles “remove” sugar from the blood for their own use.
- In habitual physical activity is often responsible for hypoglycemia, particularly in people who are not accustomed to it.



How can you prevention hypoglycemia?

- NEVER miss a meal.
- Eat carbohydrate at EVERY meal.
- If you exercise, eat a snack containing 15 to 30 grams of carbohydrate just before starting and continue taking snacks every hour if your activity is high.
- ALWAYS carry sugar with you. Keep some on your bedside table, in your car (glove compartment), in your gym bag, in your shopping bag, etc.



How can you treat hypoglycemia?

- Take sugar IMMEDIATELY.
- Take 15 grams of sugar. This corresponds with 4 sugar cubes, 1.5 dL of cola, fruit juice, lemonade, or 2 teaspoons of honey. Warning: no diet drinks.
- Even if in doubt, take sugar anyway.



What are the late complications of diabetes?

The faster-than-normal ageing induced by persistently high blood glucose levels may manifest itself differently in different individuals. While the whole organism is involved in this process of slow but progressive deterioration linked to hyperglycemia, the first organ(s) to be impaired may differ, according to individual predisposition. Two things should be remembered about the late complications of diabetes:

- their onset and evolution are not a necessary consequence of diabetes: indeed both are prevented by good diabetes care;
- moreover, should they be present, very often their consequences can be minimized by regular screening and specific treatment.

The organs where diabetic late complications may most frequently show up are the feet, the heart, the brain, the eyes, and the kidneys.

Prevention of cardiovascular accidents

Arteriosclerosis is the anatomic counterpart of ageing. It may lead to such accidents as infarction or stroke. Its acceleration due to diabetes and the associated increased risk of the so called “cardiovascular accidents” can be prevented by diabetes control. Other

accelerating factors (cardiovascular risk factors) should also be treated, if present, or avoided: ie, hypertension, high levels of blood cholesterol, obesity, sedentary habits, and smoking.

Prevention of retinopathy (eye disease)

The prevention of eye lesions is achieved by good diabetes control and, if hypertension is present, normalization of blood pressure.



Remember that eye complications are « silent » most of the time. This means that your vision appears normal even though the quality of your eye is worsening.



Therefore regular eye checks by a medical specialist are necessary in order to discover early lesions. This is especially worthwhile since these lesions can easily be controlled with laser treatment, and the progression of retinal disease stopped.

Prevention of nephropathy (kidney disease)

Kidney lesions also can be prevented by blood glucose (and blood pressure) normalization.

A regular check for traces of albumin in the urine may reveal initial lesions long before they become otherwise apparent.

Good diabetes control and special dietary adjustment may well prevent the progression of diabetic lesions in the kidneys.

Prevention of foot problems

Long-term poor control of diabetes (eg, when it has been ignored for many years) may induce two dangers for the feet:

- a decrease in their capacity to feel pain (called sensory neuropathy);
- a decrease in their capacity to receive more blood when it is needed (called arteriosclerosis).

Under these conditions the feet become extremely delicate, and even a trivial inconvenience, such as a too-narrow pair of shoes, a hot bath, or a tiny cut, can be very dan-



gerous. This can lead to ulcers on your feet and other types of complications, in the worst case leading to the loss of your toes.

Foot problems can be avoided by taking these simple steps:

- Have good diabetes control, which protects your feet
- Ask your physician to examine your feet and check for a decrease in pain sensation
- Tell your physician about hard skin, corns, breaks in the skin, infections, color changes, and ulcers
- Inspect your feet every day (if this is difficult, use a mirror or ask a friend)
- Keep your feet clean and dry, especially between the third and fourth, and fourth and fifth toes. For dry skin use neutral creams (eg, Nivea®, Neutrogena®); for sweaty skin use powder
- Change your socks, stockings, or tights daily
- Wear soft, comfortable, and well-fitting



shoes. Avoid shoes made of synthetic materials

- File your nails, do not cut them No “bathroom surgery”!

DON'T...

- Don't walk barefoot
- Don't use sharp instruments
- Don't use strong astringent lotions or corn cures
- Don't use hot water; wash your feet in lukewarm water

Next to that it is important to tell your podiatrist that you have diabetes. If in any doubt, consult your doctor.



Does diabetes type 2 interfere with everyday life?

At work

Diabetes does not decrease working capacity. Only occasional episodes of acute decompensation or late complications may—temporarily for the former, and progressively for the latter—decrease physical or mental performance. Both, however, can be prevented and are not a necessary consequence of diabetes. Rather than regarding it as just a disease, diabetes should be considered a cardiovascular risk factor; and to consider a diabetic person intrinsically unfit for a job or a given function would be like considering a smoker, an overweight person, someone with high blood pressure or cholesterol, or even a sedentary person as an invalid.



Some of the difficulties that diabetes patients may experience are not the results of the disease itself but of the ignorance of employers or colleagues, or of the short-sightedness of health care legislation. To defend themselves, diabetic patients should keep informed and inform others about diabetes, actively participate in their treatment, and take part in volunteer organizations.

When traveling

Diabetes is not an impediment to travel: neither the destination, the departure date, nor the length of the trip should be influenced.

Consult with your physician for possible modifications in diet and treatment which may be necessary during the trip. Be aware of the calorie content of unusual foods you might wish to try. Always take care to prevent food poisoning, and treat eventual “traveler’s diarrhea” immediately.

Calculate and bring the requirements needed for the entire period in your hand luggage: medicine (tablets or insulin), syringes and strips for blood glucose monitoring and/or urinary controls. In addition, keep a list of your requirements handy, and a form of diabetes identification, written in the language of the countries you are visiting.





to spur medical research toward better treatment and ultimately a cure for diabetes; to exert more force on health care authorities to give weight to diabetic patients' rights.

Ask your doctor which associations could be useful for you.

Hypoglycemia is a rare occurrence in type 2 diabetes. Don't forget, however, to always have with you sufficient quantities of sugar and starchy foods.

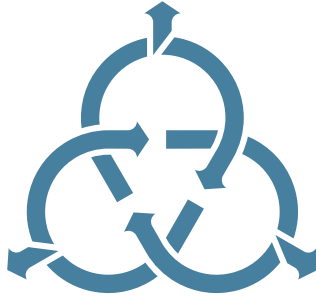
As on other occasions, it's up to you to decide how much you wish to be helped by your fellow travelers and how much and how frequently they should be concerned by your diabetes.

Diabetes associations

Throughout the world, for many years, the chronically ill have been meeting in associations. According to your diabetes, group meetings may be able to satisfy several of your needs:

to better know your disease through others who have the same disease, and to look for companionship and reciprocal help;





DESG/Servier Partnership

***Aiming to Improve Quality of Life of Patients
with Diabetes Through Education***