ALL YOU EVER WANTED TO KNOW

1st Edition

Insulin and diabetes

It is Marcel Proust who said that "the real voyage of discovery consists not in seeking new landscapes, but in having new eyes". We hope that when you read this booklet, it will help you understand insulin, what it is, how it works, where it comes from. Basically, we just want to demystify the stuff.

There are many misconceptions about diabetes and insulin, and quite often things that seem completely obvious to your doctor are a complete mystery to you. Sometimes, when we read the information contained in the legal notices of insulin manufacturers, we are even more confused that before we read it. And if you go on the internet, you end up even more confused because there is just so much conflicting information. So you then go and ask your doctor for advice. However, because your doctor assumes that you understand things in the same way as he does, he doesn't explain them and you go home after your consultation feeling frustrated about the lack of information.

These questions and answers have been developed by MedActiv together with a team of international medical specialists and consultants. We try to keep up to date with international changes in opinion, diagnosis or policy. We take the utmost care in trying to provide you with information that is factual and up to date. If you have any comments or suggestions or any question about diabetes, insulin or any related issue that you think should be answered, we would love to get your feedback or suggestions so that we can improve our leaflet and learn from your experience. To send us feedback, please logon to our Facebook page (https://www.facebook.com/MedActiv/ (don't forget to like us)) or visit us on www.medactiv.com.

About the author

Uwe Diegel (born 1965 in New Zealand), is a specialist in various forms of medical diagnostics such as blood pressure, temperature, asthma and diabetes. He is the holder of several patents relating to temperature and blood pressure measurement.

After studying music in Canada and in South Africa, he performed worldwide as a concert pianist for several years. In 1989 he changed his career due to an injury to his right arm. In 1992 he entered the world of medical diagnostics, quickly developing a particular interest in cardiovascular diagnostics.

His intense scientific curiosity has led him not only to develop new technologies in this field, but also to interest himself to field of medical manufacturing, industrial design and problems faced by Chinese manufacturing concerns.

Uwe lives in Paris, France, where he runs HealthWorks Global and does fundamental research in blood pressure diagnostics. He is today considered to be a foremost expert in the field of blood pressure management and in the manufacturing of medical diagnostics devices.

The measurement of glucose levels has now become easy. Anyone can now use a home glucose monitor that is more accurate than anything that was produced in the last 100 years

If you have diabetes, or are seriously overweight, it is hugely important to be aware of what your glucose levels are. It is an easy, innexpensive test that can be purchased in any pharmacy. Contrary to popular belief, it is quite an easy thing to manage if you set your mind to it and are proactive about your health. It is all about understanding the signals of your body.

A few basics about diabetes and insulin

We will start by giving you a few undeniable facts and rules about insulin and diabetes. These rules are very important but are often forgotten. They will be mentioned again further in this document, but are worth repeating here:

Rule 1: Your digital glucometer does not magically transform you into a doctor.

Your glucose monitor is probably really easy to use. You just pop some blood on the strip, stick it in the machine and a few seconds later it magically gives you a clinically accurate result. Isn't that great? It's child's play to measure your glucose levels... Well it certainly feels like it... However, your glucose monitor is not intended to replace regular medical examinations. It is there to be used together with your doctor as a tool to better manage your diabetes. Only a physician is qualified to interpret changes in your glucose levels.

Rule 2: When in doubt, ask your doctor for advice.

Your doctor has been working with and studying diabetes for most of his life and is an expert on the subject. Please discuss any change in your condition with him.

Rule 3: Never make adjustments to your medication unless you are advised to do so by your physician.

As mentioned earlier, your glucose monitor does not replace a regular medical examination. Your doctor has prescribed medication for you after a careful examination and it can be very dangerous to make your glucose levels fluctuate by changing your medication or by reducing the dosage on your own. If you suspect that your diabetes medication is wrong because you regularly get low or high readings on your device at home, please keep a regular record of your glucose levels for at least 10 days in a row and then contact your doctor. He will appreciate the fact that you present all the evidence to him in a clear format.

Rule 4: Do not believe in urban legends or marketing hype when it comes to your health.

When making decisions about your health, question what is commonly believed. There are many "urban legends" about diabetes, mostly based on diet and some "magic" ingredients that will cure you of diabetes and make you feel much better. Although there might be a grain a truth to these kinds of stories, they are not necessarily completely true and are certainly misunderstood.

Don't forget that health is more than just the absence of disease. Health is also about feeling good right now and long term and trying to avoid

Glucose levels will vary throughout the day, so it is important to keep a close watch on levels, especially before eating.

getting sick rather than trying to get better all the time. That is what is called **"Sustainable Health".**

What is diabetes?

The official name for diabetes is diabetes mellitus. Diabetes happens when the pancreas fails to make insulin or the body fails to respond to it. Insulin is made specifically by the beta cells in the islets of Langerhans in the pancreas.

What is the difference between Type I and Type II diabetes?

One of the functions of the pancreas is to produce insulin using the beta cells in the Islets of Langerhans. If these beta cells degenerate so the body cannot make enough insulin on its own, type I diabetes results. A person with this type of diabetes must inject exogenous insulin (insulin from sources outside the body).

In type II diabetes, the beta cells produce insulin, but cells throughout the body do not respond normally to it. Nevertheless, insulin also may be used in type II diabetes to help overcome the resistance of cells to insulin.

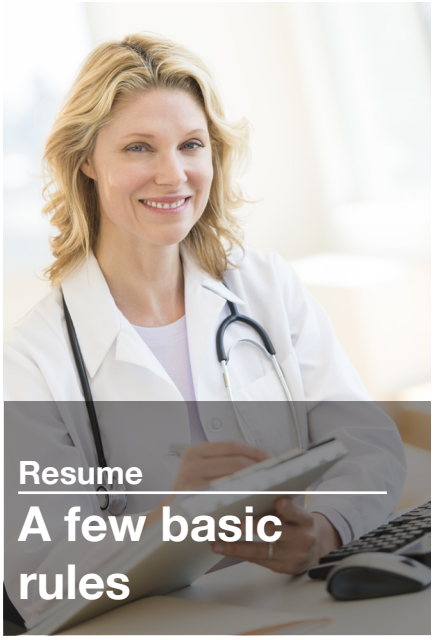
So the main difference between the 2 main types of diabetes is that in Type I diabetes, it is the pancreas that does not produce enough insulin and that in Type 2 it is the body itself that does not « accept » the insulin produced by the pancreas.

What is insulin?

Insulin is a natural hormone made by the pancreas that controls the level of the sugar glucose in the blood. Insulin permits cells to use glucose for energy. Cells cannot utilize glucose without insulin. By reducing the concentration of glucose in the blood, insulin is thought to prevent or reduce the long-term complications of diabetes, including damage to the blood vessels, eyes, kidneys, and nerves.

Why is it called insulin?

In 1869 a German pathologist called Paul Langerhans (1847-1888) discovered a groups of specialized cells in the pancreas that make and secrete hormones. Because they looked like small islands, he called them the "Islets of Langerhans". The word insulin is thus derived from the Latin word insula "island," because it is secreted by the "islets" of Langerhans in the pancreas. Known as the insulin-producing tissue, the islets of Langerhans do much more than that. There are five types of cells in an islet: alpha cells that make glucagons, which raises the level of glucose (sugar) in the blood; beta cells that make insulin; delta cells that make somatostatin which inhibits the release of numerous other hormones in the body; and PP cells and D1 cells, about which little is known. Degeneration of the insulin-producing beta cells is the main cause of type I (insulin-dependent) diabetes mellitus.



1. Your digital blood pressure monitor does not magically transform you into a doctor.
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3. Never Make Adjustments To Your Medication Unless You Are Advised To Do So By Your Physician.
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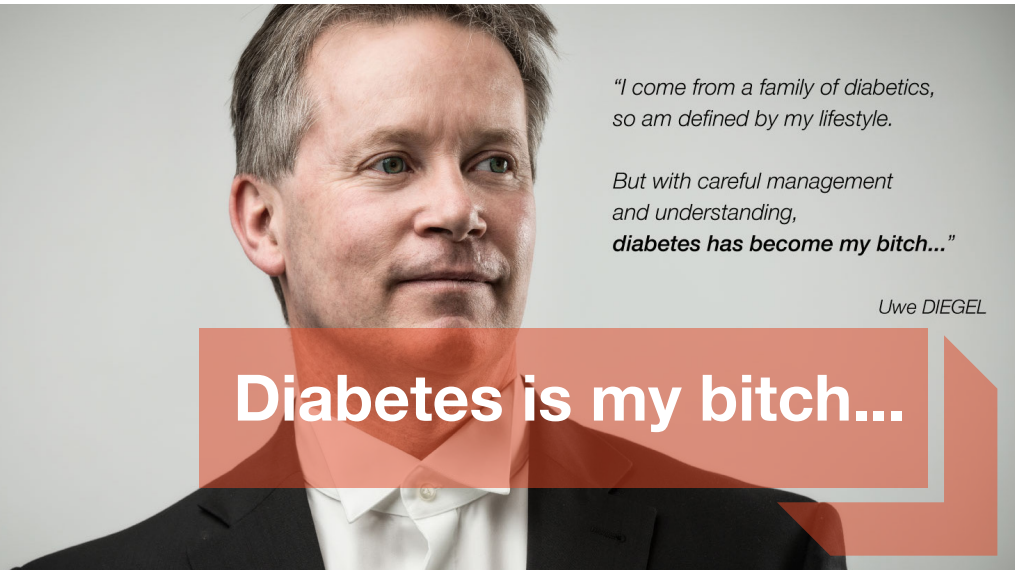


"I come from a family of diabetics, so am defined by my lifestyle. But with careful management and understanding, diabetes has become my bitch..."

Uwe DIEGEL

When was insulin discovered?

In 1921, Frederick Grant Banting and Charles H. Best discovered insulin while they were working in the laboratory of John J.R. Macleod at the University of Toronto. Banting and Best extracted material from the pancreas of dogs. They first used this material to keep diabetic dogs alive and in 1922 they used it successfully on a 14-year-old boy with diabetes.

In 1923, James B. Collip, a biochemist, discovered that purifying the extract prevented many of the side effects.

In 1923, Banting and Macleod were awarded the Nobel Prize. Best and Collip were overlooked but in a rare example of scientific brotherhood, Banting and Macleod shared the prize money with them. The US Food and Drug Administration (FDA) first approved insulin in 1939.

Insulin was the first hormone to be synthesized completely in the laboratory, a feat accomplished in 1966 by the American worker Michael Katsoyannis and scientists in China. The first recombinant human insulin was approved by the FDA in 1982.

What types of insulin are there?

Currently, insulin is available from bovine (beef), porcine (pork), and recombinant (human) sources. Regular (rapid onset, short-acting) and NPH (slower onset, longer duration) human insulin are the most commonly used preparations. An ultra rapid-acting insulin analog, insulin lispro injection (Humalog(r)) is a chemically modified, natural insulin. It was approved by the FDA in June, 1996.

However, there are different kinds of insulin that people should use according

Insulin made simple

to their needs (faster or slower acting). Most insulin users will keep two kinds of insulin, a faster acting one for during the day and a slower-releasing insulin for during the night.

Regular insulin acts within 30 minutes, and its effects last 6 to 8 hours. The maximal effect occurs 1 to 3 hours following the injection.

As compared to regular insulin, insulin lispro acts more rapidly, has an earlier maximal effect, and a shorter duration action. Therefore, insulin lispro should be given within 15 minutes of a meal, compared to regular insulin, which is given 30-60 minutes before meals.

NPH insulin is an insulin with an intermediate-duration of action. It has an onset of action about 2 hours following administration and a duration of action of 18 to 26 hours. Its maximal effect is 4 to 12 hours after administration.

Lente insulin also is an intermediate-acting insulin. It has an onset of action after 2 to 4 hours and a duration of action of 18 to 26 hours. The peak activity of lente insulin occurs 6 to 12 hours following administration.

How do I take insulin?

Mostly, insulin is administered by injection via the subcutaneous (under the skin) route. There are various systems available. Either you can buy insulin flacons (mostly in 10 ml flacons) and fill up your own syringes to inject yourself, or you can use pre-filled pens, which deliver a fixed dose that you can set according to your needs. In the USA, most people prefer to buy flacons whereas in Europe, the insulin is mostly sold in pre-filled pen doses.

There is more and more interest in inhaled insulin. At the moment, there are a couple of inhaled insulins available but they have not yet gained market acceptance. However, a number of key players in the pharmaceutical industry are developing new solutions for inhaled insulin.

Another choice is insulin pump therapy. With insulin pump therapy, a mini-insulin pump is installed permanently on the person with diabetes and a constant flow of insulin is delivered to the blood stream.

Laughter is the best medicine - unless you're diabetic, then insulin comes pretty high on the list.

Jasper Carrott

What is insulin resistance?

Insulin resistance is the diminished ability of cells to respond to the action of insulin in transporting glucose (sugar) from the bloodstream into muscle and other tissues. Insulin resistance typically develops with obesity and heralds the onset of type 2 diabetes. It is as if insulin is "knocking" on the door of muscle. The muscle hears the knock, opens up, and lets glucose in. But with insulin resistance, the muscle cannot hear the knocking of the insulin (the muscle is "resistant"). The pancreas makes more insulin, which increases insulin levels in the blood and causes a louder "knock." Eventually, the pancreas produces far more insulin than normal and the muscles continue to be resistant to the knock. As long as one can produce enough insulin to overcome this resistance, blood glucose levels remain normal. Once the pancreas is no longer able to keep up, blood glucose starts to rise, initially after meals, eventually even in the fasting state. Type 2 diabetes is now overt.

How do I store and transport my insulin?

You should always have spare insulin available, whether at home or whether you are traveling. This means that you have to find an adequate way of storing it, any time, any place. Insulin should be kept at a temperature between 2°C to 8°C. This means keeping it in the fridge at all times to have an ideal storage temperature. So when you travel, make sure that the hotel where you will be staying will have a facility available for you to store your insulin, especially if you are traveling to a tropical country. Also, when you take the plane, keep your insulin with you. Never send it in with your luggage in the hold. The holding section of the plane is not always climate controlled and often reaches sub-zero temperatures, and it is very bad to freeze your insulin, as it will develop crystals that will make it really uncomfortable for you when you inject yourself.

However, when traveling, it is important to realise that your insulin can quite comfortably go up to a temperature of 25°C for a period of up to three weeks. So several bespoke solutions have been developed to help the traveler with his insulin. The worldwide leader for these solutions is MedActiv (www.medactiv.com) and they have developed solutions that allow the diabetic person to travel for up to 5 days without electricity, while knowing that their insulin is kept at exactly the right temperature.

OK, so now you know how to store it, but here's also a couple of tips for your own comfort:

1. Injecting really cold insulin (at 2°C) can sometimes make the injection more painful. So to avoid this, take your insulin pen or vial out of the fridge at least 1/2 hour before injecting yourself to bring it to room temperature. In fact, once you've got a vial open or a pre-filled pen, you can quite safely keep it out of the fridge. Insulin kept at room temperature will last approximately one (1) month. Of course, if you are in a tropical country with extremes of temperature, you should reconsider the idea of keeping your open vials out of the fridge. Remember though, if you buy more than one bottle at a time - a possible money saver- store the extra bottles in the refrigerator. Then, take out the bottle ahead of time so it is ready for your next injection.

2. Do not store your insulin near extreme heat or extreme cold. Never store insulin in the freezer, direct sunlight, or in the glove compartment of a car.

3. Make sure that you check the expiration date, especially if you have had the bottle for a while. Don't use any insulin beyond its expiration date and examine the bottle closely to make sure the insulin looks normal before you draw the insulin into the syringe. If you use regular, check for particles or discoloration of the insulin. If you use NPH or lente, check for "frosting" or crystals in the insulin on the inside of the bottle or for small particles or clumps in the insulin. If you find any of these in your insulin, do not use it, and return the unopened bottle to the pharmacy for an exchange and/or refund.

What about my syringes?

Many people safely reuse their insulin syringes. However, if you are ill, have open wounds on your hands, or have poor resistance to infection, you should not risk insulin syringe reuse. Syringe makers will not guarantee the sterility of syringes that are reused. Keep the needle clean by keeping it capped when you're not using it. Cleaning it with alcohol removes the coating that helps the needle slide into the skin easily. Never let the needle touch anything but clean skin and the top of the insulin bottle.

Most important, never let anyone use a syringe you've already used, and don't use anyone else's syringe. Reusing syringes may help you cut costs, avoid buying large supplies of syringes, and reduce waste. However, talk with your doctor or nurse before you begin reusing. They can help you decide whether it would be a safe choice for you.

How do I get rid of my old syringes?

It's time to dispose of an insulin syringe when the needle is dull or bent or if it has come in contact with anything other than clean skin. Your syringe is medical waste. If you can do it safely, clip the needles off the syringes. When you remove the needle, no one can use the syringe. It's best to buy a device that clips, catches, and contains the needle. Do not use scissors to clip off needles - the flying needle could hurt someone or become lost. If you don't destroy your needles, recap them. Place the needle or entire syringe in an opaque (not clear) heavy-duty plastic bottle with a screw cap or a plastic or metal box that closes firmly.

Do not use a container that will allow the needle to break through or recycle your syringe container. Your area may have rules for getting rid of medical waste such as used syringes. Ask your refuse company, city or county waste authority what method meets their rules. When traveling, bring your used syringes home. Pack them in a heavy-duty holder, such as a hard plastic pencil box, for transport.

When and how often do I need to take insulin?

With the help of your health care team, you can find an insulin routine that will keep your blood glucose near normal, help you feel good, and fit your lifestyle. People diagnosed with type 1 diabetes usually start with two injections of insulin per day of two different types of insulin and generally progress to three or four injections per day of insulin of different types. The types of insulin used depend on their blood glucose levels. Studies have shown that three or four injections of insulin a day give the best blood glucose control and can prevent or delay the eye, kidney, and nerve damage caused by diabetes.

Most people with type 2 diabetes may need one injection per day without any diabetes pills. Some may need a single injection of insulin in the evening (at supper or bedtime) along with diabetes pills. Sometimes diabetes pills stop working, and people with type 2 diabetes will start with two injections per day of two different types of insulin. They may progress to three or four injections of insulin per day.

Where should I inject myself?

The place on your body where you inject insulin affects your blood glucose level. Insulin enters the blood at different speeds when injected at different sites. Insulin shots work fastest when given in the abdomen. Insulin arrives in the blood a little more slowly from the upper arms and even more slowly from the thighs and buttocks. Injecting insulin in the same general area (for example, your abdomen) will give you the best results from your insulin. This is because the insulin will reach the blood with about the same speed with each insulin shot.

Don't inject the insulin in exactly the same place each time, but move around the same area. Each mealtime injection of insulin should be given in the same general area for best results. For example, giving your before-breakfast insulin injection in the abdomen and your before-supper insulin injection in the leg each day give more similar blood glucose results. If you inject insulin near the same place each time, hard lumps or extra fatty deposits may develop. Both of these problems are unsightly and make the insulin action less reliable. Ask your health care provider if you aren't sure where to inject your insulin.

When should I inject myself with insulin?

Insulin shots are most effective when you take them so that insulin goes to work when glucose from your food starts to enter your blood. For example, regular insulin works best if you take it 30 minutes before you eat.

Too much or not enough insulin?

High morning blood glucose levels before breakfast can be a puzzle. If you haven't eaten, why did your blood glucose level go up? There are two common reasons for high before-breakfast blood glucose levels. One relates to hormones that are released in the early part of sleep (called the Dawn Phenomenon). The other is from taking too little insulin in the evening. To see which one is the cause, set your alarm to self-monitor around 2 or 3 a.m. for several nights and discuss the results with your health care provider.

Is it dangerous for me to travel when I have diabetes?

Yes of course you can. You can travel anywhere you want, but it takes some advance planning. People with diabetes have to plan a little more. Here are a few things to keep in mind about your insulin when you head out for that dream vacation.

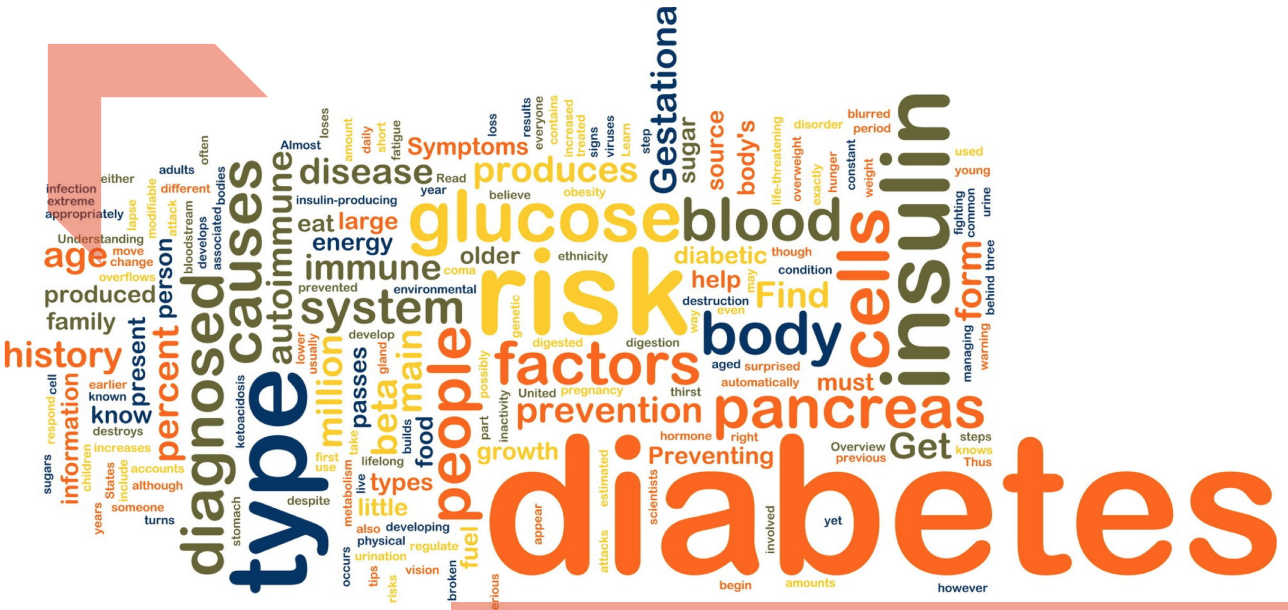
1. Your Blood Sugar

When you are traveling, it is important to monitor your blood sugar more closely. This means checking your blood sugar every four hours when you are awake. Travel can be stressful, which can raise your blood sugar level. Don't treat your blood sugar without monitoring it, and monitor it to make sure that you are giving the correct dosages of medication and/or insulin.

2. Insulin Storage

Keep your insulin with you when you travel, in your carry-on or purse. Insulin needs to stay in a fairly moderate temperature zone, and as such, cannot go with your luggage in the depressurized compartment. Also, if there were ever a baggage handling mishap, you would want your insulin to be with you: if your bags end up in Singapore when you are in Sao Paulo, you'll be in trouble. You want to make sure you have your insulin with you at all times.

Insulin does not necessarily need



Have Diabetes, Will Travel...

The Definite Guide to Traveling with Diabetes

to be refrigerated at all times. It is perfectly OK for you to keep your insulin in your hand luggage for a 12-hour flight across the world. To keep your insulin at moderate temperatures, however, consider the climate in which you are traveling. Often, keeping your insulin in an insulated container or thermos will be enough to keep it cool in warm temperatures. If you are someplace very warm, however, you might consider keeping some frozen water bottles in your insulated container as well, which will help keep your insulin even colder. The ideal solution is of course to simply use a dedicated cooler bag for insulin such as the iCool Prestige from MedActiv that will keep your insulin at a perfect constant temperature. If you are going to be in cold climates, perhaps skiing, keep your insulin close to your body so that it stays warm.

Storing your insulin on a trip is another matter to deal with. Don't leave your insulin in the glove compartment of a car, where temperatures can vary. Backpacks can also get very warm in the sun. Keep your insulin someplace where you can reach it.

3. X-rays

Insulin manufacturers have a warning on their insulin that you should not expose insulin to x-rays. This does not mean that being x-rayed once or twice as you carry your luggage on should be a problem. However, if you are going to be traveling a lot, and going through many security checks, you can ask for your insulin to be visually examined. You should also be cautious to make sure that your insulin is not in the x-ray machine for too long, so asking for a visual examination is never a bad idea.

4. Packing

When you go on a trip, be sure to bring an extra supply of insulin and medication with you. You want to have all of the medication with you. If you do need to get medication while you are in a foreign country, see our advice below. Be sure to pack extra syringes and extras of all of the materials you generally use to monitor and care for your diabetes.

5. Insulin Conversions

Not every country has insulin standardized, and some countries offer varying strengths of insulin. If you must get insulin when you are away, check the strength to make sure it is equivalent.

If you have to get insulin while you are away, try to get the same kind of insulin that you are normally prescribed. If you cannot get the same brand, get the same

formulation in a different brand. A pharmacist or doctor can help you establish which insulin is equivalent.

6. Consult a doctor

If you have to pick up insulin when you are in a foreign country, get the kind of insulin that you are used to. This particularly means that you should not switch from a slow-acting to a fast-acting insulin, or vice versa. These types of changes should always be made with medical supervision.

Go to a doctor that you trust in a foreign country. Consider calling home to get references if possibly, or ask a friend in your new location.

Insulin-dependence can be difficult to manage, particularly when traveling. But with a little forethought and some information, you can plan an exciting getaway that still maintains your health.

Have diabetes, will travel...

The ultimate guide for traveling with diabetes

The secret of an enjoyable travel experience for a person with diabetes is in the way in which it is prepared, and taking just a couple of precautions before departure can make all the difference. Insulin is sensitive to heat and should ideally be kept in a refrigerator with a temperature between 2 and 8°C. People with diabetes are much more sensitive to certain events or changes of routine which might affect their metabolism or their lifestyle.

Today, the diabetic who is in control of his disease can travel almost anywhere. This being said, it is necessary before leaving:

- To ensure that his diabetes is well controlled.

- To get information about the availability of local diabetic care. The best way to do this is to get in touch with the local diabetes association. Almost without exception, every country in the world has an association dedicated to diabetes information. Simply go on the net, and type the name of the country, together with “diabetes association”, and you will quickly get all the info you need. Alternatively, phone your local association and they will most certainly give you the contacts you need.

- Try not to travel alone in countries with extreme temperatures where you do not speak the local language.

THE HARDWARE REQUIREMENTS

Being autonomous is the first priority for the diabetic on a journey.

- Check with your doctor that you have a sufficient stock of insulin (always take enough insulin for 10 days more). It is important to realize that in several countries, insulin is sold mainly in 10 ml bottles and not in prefilled pens, like in Europe. You must thus ensure that you have enough of your own insulin and must never assume that the country that you are visiting will have exactly the same form of insulin as you use.

- Check that you have all the necessary hardware for your daily controls. If you travel in a country with a different time zone, unusual temperatures or where you might eat some strange food that your body is not used to, you will probably have to control your glycemia more often than normal. So ensure that you have all the necessary supplies (control strips, injector pens, needles, syringes, etc).

- If it is a long trip (more than a couple of days), check the battery in your glucometer.

- Ensure that your insulin is always

sheltered from heat and/or cold. Insulin should ideally be stored in a refrigerator between 2 and 8°C. Ensure that the hotel of your choice has a refrigerator available for you to store your insulin. For the day trips use an isothermal case (available from medactiv).

- Pack some sugar bags (in case of hypoglycemia) and some quick-release insulin (in case of hyperglycemia) in your travel case.

ALL THAT IRRITATING PAPERWORKS

- Download a diabetes travel certificate and ask your doctor to sign it. This will make it a lot easier for you at the airport as you hear that ominous slapping of the rubber gloves and get ready for that full body-cavity search. You can download a travel certificate on medactiv.

- It is also a REALLY GOOD IDEA to have a diabetic passport in your wallet in case you faint or have an accident, so that the paramedic who "looks" in your wallet can immediately find out that you are diabetic and that it is necessary to give you sugar. You can get a diabetic passport directly from your diabetes association.

- Always ask your doctor to give you a prescription for your insulin, in case your insulin gets lost. Make sure that it is legible by international standards (English normally works best).

YOUR CHECKLIST

Made a checklist the day before leaving and put a notch next to each item:

- USUAL INSULIN (+ 10 DAYS)
- FAST INSULIN
- SUGAR
- SYRINGES WITH NEEDLES AND/ OR PREFILLED PENS
- TEST STRIPS
- LANCETS
- GLUCOMETER WITH FRESHLY TESTED BATTERY
- DOCTOR'S CERTIFICATES
- DIABETIC PASSPORT
- PRESCRIPTION FOR SPARE INSULIN

THE TRIP ITSELF

- Check your sugar levels before departure; if possible, leave after a normal breakfast taken at the usual hour. As a precaution, reduce by 2 to 4 units the amount of insulin you take in the morning in order to maintain a safety level.

- If you are in the car, make regular pauses (a 10 minutes stop every 2 hours is a good rule) and take a collation sufficiently rich in slow glucids.

- Check your capillary glycemias more frequently; if it is under 0,8 g/l, keep some sugar nearby and keep some fast glucids (fruits, biscuits) within range.

- Drink water regularly if the weather is hot.

- In the event of a car breakdown, eat some food if you must change a wheel or if you have to walk to a rescue station.

- Always keep your insulin with you in the plane and in the airport. As a habitual traveler, I have sometimes been stuck in airports for over 24 hours.

- NEVER put your insulin in the baggage compartment of the plane. The temperatures in the luggage storage are often unstable and your insulin might get damaged by the cold. And if your luggage is lost, so will your insulin. Another reason is that the flight might be delayed by several hours while you are stuck in the airport.

- Warn the staff on the plane that you are diabetic and that you need your meals on time (this is also a great excuse to be served before everyone, like a VIP).

TIME ZONES AND REMOTE DESTINATIONS

- Beyond 3 hours of jet lag, insulin intake must be managed systematically. An essential rule consists in **NOT CHANGING THE TIME ON YOUR WATCH** before your arrival and your first meal in the country of destination; this will help you to follow the action of your insulin and to distribute the food intakes.

- Take about 1/4 of your usual daily insulin needs with every meal (to be taken every 6 hours). Because the meals are very regular on planes, they are a good safety to avoid hypoglycemias.

- If your plane is delayed, check your sugar levels every 6 hours, and correct if need be with an addition of ordinary insulin.

FOOD, FOOD, OH GLORIOUS FOOD

Even if you are on holiday, try not to upset too your usual dietary habits:

- Locate the equivalents of your traditional starchy foods and use them in the composition of your meals.

- Be careful with excesses of sweet fruits or those delicious Italian ice

creams that are likely to disturb your glycemia! Avoid sodas...

- Digestive embarrassments are very frequent in tropical countries. Rather than resorting to anti diarrheal or antiemetic medication, drink lots of water and eat white rice that will bring you the necessary glucids.

- Take care to drink water regularly.

GENERAL ADVICE

For people with diabetes, it is super important to watch your feet. For a diabetic, the risks of amputations are much higher following banal infections or an unnoticed wound. Always use very comfortable shoes and change them several times per day in order to vary the points of frictions. Never walk barefoot, especially on a beach or on other surfaces exposed to the sun. Do not forget to examine your feet several times per day.

If you follow the above simple rules, you will be able, like Marcel Proust, to look at the world with new eyes.

I have diabetes, will this affect my blood pressure?

Yes; it is primordial for people with diabetes to regularly monitor their blood pressure as vascular failure is the most important mortality factor for people with diabetes. So it is important not only to monitor your blood pressure, but also to ensure that it stays as low as possible.

The importance of recognizing the link between hypertension and diabetes control

The United Kingdom Prospective Diabetes Study (UKPDS), the largest clinical diabetes trial ever conducted, has found that patients with both Type 2 diabetes and hypertension who tightly control their blood pressure reduce by over 30% the risk of strokes and death from long-term complications of diabetes, and that aggressive blood glucose and blood pressure control will significantly reduce mortality rate in type 2 diabetics.

Blood Glucose: A Continuous CHD Risk Factor?

Coronary heart disease is responsible for almost 60% of the deaths in people with diabetes. They have a two to threefold increased risk for coronary

heart disease and two to fourfold higher coronary heart disease morbidity and mortality rates. In people with diabetes, coronary heart disease occurs at a younger age. Even in the presence of normoglycemia, an increase in cardiovascular risk is observed as the glucose increases. It is now a recognized fact that glucose is a continuous cardiovascular risk factor, similar to hypercholesterolemia and hypertension.

The Answer, Tight Blood Pressure Control

The goal of treating arterial hypertension in diabetic patients is to prevent death and disability associated with high blood pressure. In addition, other reversible risk factors for cardiovascular disease, seen so frequently in hypertensive diabetics, also need to be addressed. The optimal goal of blood pressure control in diabetics has not been established, but there are indications that it should be lower than the 130/85 mmHg systolic/diastolic pressure recommended by current guidelines. In the presence of multiple associated risk factors, most guidelines suggest a threshold for intervention of 140/90 mmHg. In particular, in hypertensive diabetic patients intervention must be early and aggressive.

Diabetes and hypertension: bad companions

We all die of a broken heart...

"We all die of a broken heart... The moment that the heart stops beating indicates the end of life. The heart is the most important organ in our body, yet we abuse it, both emotionally and physically. You only have one heart, love it, always and forever..."

Uwe Diegel

Most patients with Type 2 diabetes die from vascular disease. The UKPDS has reinforced the importance of aggressive management of blood pressure in preventing vascular complications of Type 2 diabetes. Diabetic patients with myocardial infarction have a two to threefold higher mortality than do their non-diabetic counterparts. The most important factor for this is increased left ventricular failure, which may be due to a "diabetic cardiomyopathy" that is not related to the arteriosclerosis. Another possible factor is the higher prevalence of silent ischemia that can lead to delayed diagnosis of CHD in people with diabetes. Diabetic patients with myocardial infarction also have worse long-term prognosis than do their non-diabetic counterparts.

High blood pressure is twice as frequent in diabetics compared with the general population, and often precedes and contributes to the development of diabetic nephropathy.The goal of treating arterial hypertension in diabetic patients is to prevent death and disability associated with high blood pressure. In addition, other reversible risk factors for cardiovascular disease, seen so frequently in hypertensive diabetics, also need to be addressed.

Responsibility starts at Home!

Aggressive control of blood pressure may have beneficial effects on microvascular complications equal to or greater than that of tight glycemic control. Further, the beneficial effects of improved blood pressure control extend to cardiovascular and stroke events, which occur with much greater frequency (and with greater morbidity and mortality) than microvascular complications in elderly diabetic patients. Aggressive control of blood pressure should be a high priority in the management of hypertensive diabetic patients.

People with impaired glucose tolerance have a higher risk for coronary heart disease. Even in the presence of normoglycemia, an increase in cardiovascular risk is observed as the glucose increases. It is now a recognized fact that glucose is a continuous cardiovascular risk factor, similar to hypercholesterolemia

and hypertension and that intensive insulin therapy following MI in diabetic patients reduces mortality.

Take a global approach to prevent coronary heart disease. Teach your patients about sustainable health. Teach your patients to take 60 seconds out of their daily life to check their blood pressure.

Hypertension, diabetes and erectile dysfunction

The most common cause for erectile dysfunction (ED) is impaired blood flow into the penis, which is a common result of arteriosclerosis and diabetes. In fact, in about forty percent of all people over the age of 50, erectile dysfunction is caused directly by arteriosclerosis. About 50% of all people suffering from diabetes (insulin dependent) suffer from some form of erectile dysfunction.

Erectile dysfunction is defined as the inability to achieve or maintain an erection sufficient for mutually satisfying intercourse. Erectile dysfunction impacts more than a man's sexual activity. The emotions that coincide with this condition often have a significant effect on a man's self-esteem, as well as on his relationship with his partner. Although the incidence of ED increases with age, it is not an inevitable result of ageing. For the elderly and for others, ED may occur as a consequence of specific illnesses or of medical treatment for certain illnesses.

The most frequent physical causes of ED are vascular diseases including arteriosclerosis, hypertension, hypercholestremia and other conditions that interfere with the blood flow to the penis. Because adequate arterial supply is critical for erection, any disorder that impairs blood flow may be implicated in the etiology of erectile failure. Some diseases associated with ED can affect both the vascular and the nervous systems. Diabetes is an example.

Hypertension in patients with diabetes frequently manifests certain unique and challenging properties. For example, persons with type 2 diabetes often lose their normal circadian rhythm of blood pressure and heart rate. Loss of normal nocturnal drops in blood pressure and heart rate may reflect both autonomic dysfunction and/or decreased sensitivity of renal-neural sensing of volume-pressure relationships. Disproportionate elevations of nocturnal blood pressure, especially systolic blood pressure, increase the 24-hour integrated cardiovascular and renal load, are more clearly associated with albuminuria and left ventricular hypertrophy, and thus greatly increase CVD risk as well as progression of renal disease in these patients.

Diabetes results in poor circulation and/or peripheral neuropathy. When the nerves are involved, sexual stimuli are not transmitted appropriately to and from the brain and ED develops.

Research has resulted in significant advances in both the diagnosis and treatment of erectile dysfunction. Physicians now understand that approximately eighty-five percent of erectile dysfunction is attributable to physical conditions while only fifteen percent is due to psychological conditions.

Prescription medications often cause erectile dysfunction as a side effect. Many medications fall into this category including antidepressants, antipsychotics, treatments for cancer of the prostate, chemotherapy and some antihypertensives notably beta-blockers, diuretics and ace Inhibitors/ calcium channel blockers, However, as many cases of ED are caused by personal reactions to specific medications, a change of prescription to another class of medication is often all that is needed to correct the condition.

Correct What Can Be Corrected

Keeping diseases such as diabetes and hypertension under control will go far in preventing sexual dysfunction. About one person out of three has high blood pressure (hypertension), which requires regular monitoring either by medical personnel in the office or at home by the patient or a

Many people have high blood pressure or glucose for years without knowing it. Careful monitoring and management of these 2 vital signs will completely change the future of your health. Listen to the signals of your body.

family member. Home blood pressure monitoring is recommended both for the initial diagnosis of hypertension as well as for the evaluation of the response to treatment. Home monitoring also has potential value in assessing resistant hypertension, hypotensive symptoms associated with medication, and autonomic neuropathy. It also empowers the patient to take responsibility for his or her health.

Further, the beneficial effects of improved blood pressure control extend to cardiovascular and stroke events, which occur with much greater frequency (and with greater morbidity and mortality) than microvascular complications in elderly diabetic patients. Aggressive control of blood pressure should be a high priority in the management of hypertensive diabetic patients. It should also be a high priority in the treatment of people suffering from erectile dysfunction.

The first consideration in a man with diabetes and ED is optimal control of blood glucose with avoidance of hypoglycaemia. This measure will often also improve neuropathy. Diagnosis and treatment of concurrent hypertension, which is common in men with diabetes, are additionally important. At times, changing medications, especially cardiovascular drugs, may reverse erectile dysfunction.

Many people have high blood pressure or glucose for years without knowing it. Hypertension and diabetes are the leading cause for penile dysfunction.

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