

**the  
complete  
guide  
for**



**controlling  
hypoglycemia**

# Personal DATA

Name .....

.....

Address .....

.....

Phone .....

## Diabetes Treatment Center:

Name .....

.....

Address .....

.....

Phone .....

## In urgent case contact with:

Name .....

.....

Address .....

.....

Phone .....

## Presents other risk factors

DYSLIPEMIA

OBESITY

HYPERTENSION

TABAQUISM

OTHER .....

# OBJETIVES of this Booklet



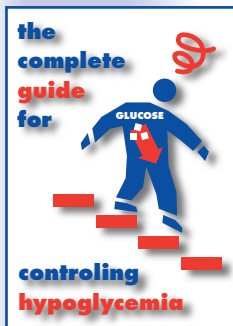
We made this booklet to try to **help you how better detect** the hypoglycemia getting the most of your own experiences with previous hypoglycemic episodes.

We believe that by **filling up regularly** all the data in the “hypoglycemia sheet” after experiencing an hypoglycemia you can learn to identify some alarm signs and symptoms which previously you did not pay attention.

Doing like this we hope you will **master how to avoid** those severe hypoglycemic episodes that worries you and your family especially since the time you have lost some of your early warning signs.

By analyzing carefully all the data that you have written in your hypoglycemia record sheet you will learn to **identify** some mild symptoms and this will help you to develop your own prevention strategies and therefore the frequency and severity of the hypoglycemic episodes will diminish.

Additionally we have include a short review of hypoglycemic information and also what we call «**The Ten Golden Rules**» for hypoglycemia prevention that we hope also will help you.



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## important

Hypoglycemia is without any doubt the most important, common in sometimes dreaded diabetic complication specially of those patient treated with insulin and struggling for a tight diabetic control.

## definition

**Hypoglycemia:** biochemically can be defined as a blood glucose level less than 70-mg%

Hypoglycemia can be clinically, classified as **mild, moderate, and severe**. **Mild:** During hypoglycemic episodes there are neurogenic symptoms like: excessive perspiration, shaking, heart palpitations, etc. **Moderate:** Besides the precedent symptoms it can appear some mild neuroglucopenic symptoms as a consequence that our brain does no function perfectly, like: blurred or double vision, lack of concentration, mental confusion and hunger. **Severe:** During the severe hypoglycemic episode you may loss consciousness, have convulsions, etc. Note that in the severe hypoglycemia the patients needs someone's help to restore the wellbeing. In contrast during mild and moderate hypoglycemic episodes the patients can treat themselves.

## causes

The main causes are:

- Irregual meal time or amount consumed
- Excessive exercise, without being planned.
- Dosage errors, or variation in insulin absorption
- Excessive alcohol consumption
- No obvious cause.\*

\*Note that One out of three hypoglycemic episodes in those patients under intensive insulin therapy, the hypoglycemia lacks apparent cause.

## symptoms

The **usual symptoms are a normal consequence of our counterregulatory hormone system** that prevents our brain. Our brain is absolutely dependent on glucose as a fuel source and it has not glucose storage. Our counterregulatory hormone system to try to avoid low level of glucose, in our brain by releasing glucose mainly from the liver.

When glucose decreases less than 70-mg %, **our body begin to release hormones** like glucagon, adrenaline and others hormones, well before symptoms appears.

It is important to say that some mild hypoglycemic **symptoms may appear with normal blood glucose levels** specially in those patients chronically poor diabetic control but there will be not severe symptoms during this fake hypoglycemic episodes because the brain has glucose enough for its functioning.

The hypoglycemic **symptoms may be different even in the same person** depending in the time the hypoglycemic presentation and as the time goes by all the persons diabetes experiences hypoglycemic symptoms changes. Frequent symptoms are:

- COOL SWEAT
- NERVOUSNESS
- TIREDNESS
- DIZZINESS
- HUNGER
- DOUBLE OR BLURRED VISION
- HEART PALPITATIONS
- IMPAIRED SPEECH
- SHAKING
- ITCHING
- MENTAL CONFUSION
- SEVERE HEADACHE
- INSOMNIA
- YAWNING
- COMA
- BEHAVIORAL ALTERATIONS

# hypoglycemia

## UNAWARENESS

### definition

Is the inability to detect the beginning of a hypoglycemic episode.

After having diabetes for many years it happens that many subject to with diabetes have lost partially o totally their **counterregulatory hormone systems** that usually protect us from the severe hypoglycemia, in that lost leads to what we call unawareness hypoglycemia.

The **glucagon** response generally after 5 year of diabetes is gone, **adrenaline** response is usually diminished after 10 to 20 years of diabetes duration. (Although this occurs only in a small percentage of all patients with diabetes).

The **prevalence** of hypoglycemia unawareness in twelve recent studies was 26% and that means that one out of four diabetic patients on insulin may have to faces this problem. The importance of this syndrome is that when it occurs, the chances of the developing a severe hypoglycemic episode is increased 6 fold.

### causes

The most usual causes are:

- History of frequent and repeat hypoglycemic episode.
- Recent severe hypoglycemia.
- Diabetes of long duration.
- Medication: Beta Blockers.
- Alcohol intoxication, with intensive insulin treatment.

Recent studies reveal that there is no relation to the rate of the glucose decrease neither with the autonomic neuropathy and nor with human insulin treatment initialization. The most frequent cause is **repeated hypoglycemic events** even if they are mild or may occur unnoticed during sleep.

Recent studies have shown that the **symptoms can be missing**, and the hormonal response diminish for hours even days after a severe hypoglycemic episode and that make it easier to develop severe hypoglycemic during the hours and the following 3 or 4 days after an severe episode.

Intensive insulin treatment produces an lower glucose average levels, permitting less **errors** in the inevitable variation of the food, exercise or insulin. The frequency of hypoglycemia is 3 times higher than in conventional insulin therapy. Our brain **get use to** lower glucose levels so in order to trigger the glucose hormonal counter-regulatory response a very low glucose level is needed, sometimes as low as 40 or 30 mg % and when this sugar levels occurs it is usually to late for the patient to treat themselves.

**Medicines**, like beta blockers, can mask the initial of hypoglycemia symptoms and we must be well aware of it.

**Alcohol** provokes severe hypoglycemia episodes by a double mechanism because it consumes the deposits of hepatic glucose and further diminishes the state of alertness or provokes mental confusion.

All of these cases are reversible and there are lot studies that demonstrates that by carefully avoidance all the hypoglycemia episodes even those biochemical hypoglycemia **we can restore the symptoms** and partially the counterregulatory hormonal response in a short time usually after a month or so.

In the causes where the main cause is the long standing diabetes we have not found yet treatment to restore the hypoglycemia counterregulatory hormonal response and that is why we have to develop **special education programs** that maybe useful for the patient in order to prevent the consequence of the severe hypoglycemic episode.

Sometimes maybe we have to aim for a «moderate good diabetic control» in order to prevent the severe hypoglycemic episode.

## treatment

Treatment is a simple **15/15 rule**:

**15 grams of carbohydrates and wait 15 minutes to again to check glucose blood levels.**

### Example:

**Food containing 15 grams of carbohydrates:**

Orange	<b>180</b> gr.
Apple	<b>125</b> gr.
Pear	<b>140</b> gr.
Banana	<b>75</b> gr.
Juice	<b>160</b> cc.
Regular Coke	<b>150</b> cc.
Sugar	<b>1</b> cube
Glucosport	<b>3</b> pills

The **severe hypoglycemia** must be treated exclusively with glucagon and the family and all the significant ones must be trained on the use of the glucagon-kit, and it is very important to remember them not to try to feed us when we are unconciencious.

The **glucagon injection** can be repeated after 10 minutes, if necessary.

It is important to know that glucagon **does not work when the cause hypoglycemia is alcohol ingestion** because the only working treatment will be IV glucose.

## prevention

The complete avoidance of all the hypoglycemic episodes is no possible with our current therapies and especially if we aim for a **tight diabetic control** and does why we have to develop and **PREVENTION MENTALITY**.

When after our best efforts severe hypoglycemic episode occurs this will lead us to the wish to increase our knowledge in **preventive and treatment measures**.

Our «**Ten Golden Rules for Hypoglycemic Prevention**» shown in the beginning of this booklet will help us.

**In the future**, glucose sensors will be develop that will alert us when our blood glucose level is going under critical glucose level, and our present hypoglycemic challenge will be gone.

**The booklet you have in your hands was develop to help you until the time this bright future became a reality.**

# hypoglycemia

## RECORDS SHEET

### instructions

As you already know our hypoglycemic symptoms uses to changes as the time goes by. When you are experiencing an hypoglycemia or you found in your meter a glucose level less 70 mg%.

#### STOP AND THINK HOW DO YOU FEEL?

In every hypoglycemic sheet there are a list of different hypoglycemic **SYMPTOMS** that may help you to identify some changes or reactions that are produce when you are about to have a hypoglycemia; please indicate with **X** when a symptom is positive; also the date and time of the hypoglycemia.

We are asking you also to fill up 3 blood glucose values. Your BG estimate, them the BG found in your meter before and after treatment.

**Write down also** if someone else has noticed in you any behavior changes or signs while you were having the hypoglycemia and all the possible causes, real o perceived.

We wish you to **fill up the hypoglycemic sheet AS SOON AS POSSIBLE** after experiencing hypoglycemia or finding a glucose level less than 70 mg% in your meter.

Please contact by phone to your diabetes educator and discuss whit her after every hypoglycemic episode during the period that you are doing this hypoglycemic awareness training exercises

**DATE**DAY   MONTH   HOUR     .....**SYMPTOM** (mark with X in case)

- |   |  |
|---|--|
| <input type="checkbox"/> POOR CONCENTRATION | <input type="checkbox"/> CHANGE OF VISION    |
| <input type="checkbox"/> MENTAL CONFUSION   | <input type="checkbox"/> ITCHING             |
| <input type="checkbox"/> CHANGE OF HUMOR    | <input type="checkbox"/> NAUSEA, YAWNING.    |
| <input type="checkbox"/> SHAKES             | <input type="checkbox"/> NERVOUSNESS         |
| <input type="checkbox"/> TIREDNESS          | <input type="checkbox"/> INSOMNIA            |
| <input type="checkbox"/> HUNGRINESS         | <input type="checkbox"/> PERSONAL SENSATIONS |
| <input type="checkbox"/> SWEATING           | <input type="checkbox"/> SOME SYMPTOM        |
| <input type="checkbox"/> HEART PALPITATIONS | NOT LISTED                                   |
| <input type="checkbox"/> HEADACHE           |  |

**Description symptom** (To be filled in by Physician):  
.....  

- 
- Persons with you when you had hypoglycemic symptoms.

**GLUCOSE LEVELS**    **0**     **during** hypoglycemia    **after** treatment    **0**     **personal estimate****ADDITIONAL NOTES****Treatment** used:  
.....  
Possible or probable **causes**:  
.....

# Ten Golden Rules FOR SEVERE HYPOGLYCEMIA PREVENTION

1

## IF YOU THINK THAT CAN HAVE HYPOGLYCEMIA:

- Drink a glass of juice, sugar water, gluco-sport (15 gr. of carbohydrates and 15 min. waiting).
- When possible try to confirm with your meter the glucose value.

2

## ALWAYS CARRY WITH YOU GLUCOSE TABLETS OR SACHAROSE...

- Besides wear an ID medal, brazellet or card telling you have diabetes.

3

## NEVER WAIT OR POSTPONE THE TREATMENT OF A HYPOGLYCEMIA EPISODE.

- It is a mistake to think, that you can do it later.

4

**WHEN SOMEONE CLOSED TO YOU SUGGEST YOU TO EAT SOMETHING** because they think that you may be experiencing a hypo, please follow their advise or at least check your blood sugar.

5

**BE SURE** that all your significant ones know that you have diabetes and how to identify and treat an hypoglycemia.

**6**

**BE AWARE OF NEW SYMPTOMS...  
and try to avoid repeated episodes of mild hypos.**

As you already probably know your symptoms may change over time. After having a hypo please think it over and try to make it a learning experience that helps you for the next one.

**7**

**WE HAVE TO PAY SPECIAL ATTENTION...  
and develop prevention strategies if:**

- We have eaten less than usual.
- If we have exercised more than usual (please remember that exercise may lower your blood glucose hours after finishing the exercise).
- Some women during menses.
- In the week after experiencing a severe hypo episode.

**8**

**TRY TO SLEEP WITH SOMEONE**, if it is not possible, you should develop special prevention measures as checking daily your blood sugar before going to bed and check often 3 a.m. glucose values, specially you may also ask someone to make you a phone call at regular times.

**9**

**TEACH YOUR FAMILY** how to keep cool and how to use the glucagon when you are inconciencious, because then, they never must try to feed you. Glucagon inyection may be repeated after 10 min when needed. The alcohol ingestion related hypos are not solved with glucagon and they need IV glucose.

**10**

**KEEP ALWAYS YOUR GLUCAGON UPDATED** in the refrigerator and it is advisable better to have a couple of vials.

