

**the
complete
guide
for**



**controlling
hypoglycemia**

Personal DATA

Name

Address

Phone

Diabetes Treatment Center:

Name

Address

Phone

In an urgent case contact with:

Name

Address

Phone

Presents other risk factors

☐ DYSLIPEMIA

☐ OBESITY

☐ HYPERTENSION

☐ TABAQUISM

☐ OTHER

OBJETIVES of this Booklet

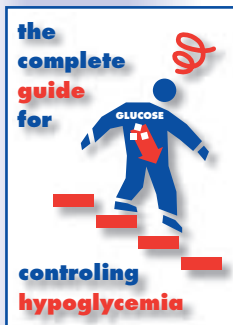
We made this booklet to try to **help you how better detect** the hypoglycemia episode. Most of your own experiences with previous hypoglycemic episodes are the best ways to become familiar with correction.

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

Doing this, we hope you will **master correction** of those severe hypoglycemic episodes that worries you and your family. Especially, if 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. Therefore, the frequency and severity of the hypoglycemic episodes will diminish.

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



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important

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

definition

Hypoglycemia can be defined biochemically, 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 and as a consequence that our brain does not function perfectly, like: blurred or double vision, lack of concentration, mental confusion and hunger. **Severe:** During the severe hypoglycemic episode you may experience loss of consciousness, have convulsions, etc. Note that in the severe hypoglycemia, the patients needs someone's help to restore the well-being. 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 counter-regulatory hormone system** that prevents our brain functioning in a normal manner. Our brain is absolutely dependent on glucose as a fuel source and it has no glucose storage. Our counterregulatory hormone system in our brain functions incorrectly trying to avoid low levels of glucose, by releasing glucose mainly from the liver.

When glucose decreases to 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 who are in chronically poor diabetic control but there will not be 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 on the time of the hypoglycemic presentation. As time goes by, all the person's diabetic experiences change. 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

Hypoglycemia unawareness is the inability to detect the beginning of a hypoglycemic episode.

After having diabetes for many years many persons with diabetes have lost partially or totally their **counterregulatory hormone systems** that usually protects them from the severe hypoglycemia that leads to what we call unawareness hypoglycemia.

The **glucagon** response is gone generally after 5 years of diabetes. **Adrenaline** response may be 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 face 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, 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**. The hormonal response may diminish for hours, even days after, a severe hypoglycemic episode. This makes it easier to develop severe hypoglycemic reactions during the hours and the following 3 or 4 days after a severe episode.

Intensive insulin treatment produces a lower average glucose 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 **gets used 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 level occurs it is usually too late for the patient to treat themselves.

Medicines, like beta blockers, can mask the initial symptoms of hypoglycemia 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. There are many studies that demonstrate that by careful avoidance, all of the hypoglycemia episodes, even those of biochemical hypoglycemia **can be restored by the body** and partially the counter-regulatory 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 treatment to restore the hypoglycemic counter-regulatory hormonal response. That is why we have to develop **special educational programs** that maybe useful for the patient in order to prevent the consequences of the severe hypoglycemic episode.

Perhaps we need to aim for a «moderately 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 repeat the glucose blood levels recheck.

Example:

Food containing 15 grams of carbohydrates:

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

Severe hypoglycemia must be treated exclusively with glucagon and the family (and all the significant persons) must be trained on the use of the glucagon-kit. It is very important to remind them not to try to feed you when you are unconcious.

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

It is important to know that glucagon **does not work when the cause of the hypoglycemia is alcohol ingestion**. The only working treatment for this condition is IV glucose.

prevention

The complete avoidance of all the hypoglycemic episodes is not possible with our current therapies. Especially, if we aim for a **tight diabetic control** as well to develop and **PREVENTION MENTALITY**.

When severe hypoglycemic episodes occur (even after our best efforts) this will lead us to the desire to increase our knowledge in **preventive and treatment measures**.

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

In the future, glucose sensors will be developed that will alert us when our blood glucose level is going below critical glucose levels, and our present theories of hypoglycemic challenge will be gone.

The booklet you have in your hands was developed to help you until the time this bright future becomes a reality.

hypoglycemia

RECORDS SHEET

instructions

As you already know, the hypoglycemic symptoms uses to changes as the time goes by. When you are experiencing an hypoglycemia or you find in your glucometer level less 70 mg%.

STOP AND THINK HOW DO YOU FEEL?

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

We are asking you also to write down 3 blood glucose values. Your (1)BG estimate, them (2) the BG found on your meter before and (3) after treatment.

Write down also if someone else has noticed in you any behavior changes in you or signs while you were having the hypoglycemia and all the possible causes, real or 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 with her after every hypoglycemic episode during the period that you are doing this hypoglycemic awareness training exercise.

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 wait 15 min.).
- When possible try to confirm with your meter the glucose value.

2

ALWAYS CARRY GLUCOSE TABLETS OR SACHAROSE WITH YOU...

- Always wear an ID medal, brazellet or have a card identifying that 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 SUGGESTS THAT YOU 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 family and friends know that you have are a diabetic and they know how to identify and treat a hypoglycemic episode.

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 preventive 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 for instance, checking daily your blood sugar daily before going to bed and check again at 3 a.m. for this value, or 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 unconciencious, because they must never try to feed you. Glucagon injections may be repeated after 10 min when needed. Alcohol ingestion related hypos are not solved with glucagon and they need IV glucose as previously stated.

10

ALWAYS KEEP YOUR GLUCAGON UPDATED and in the refrigerator. It is advisable to have a couple of extra vials available.

[illegible]

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