The school life of a child with type 1 diabetes should not represent any problem for the school or educational center where he or she is enrolled.

Generally, the diabetic child needs to have insulin injected during school hours. Therefore, in addition to the need for health professionals in educational centers, **it is necessary for the teachers of these students to know the most important aspects of the type 1 diabetes treatment as well as the different situations that can occur during the school day.**

A fluent exchange of information between the parents and school staff will help the child to keep his/her diabetes under control. Besides, the better informed the school is, the easiest its collaboration will be.

For this reason, we have compiled here a summary of information on juvenile diabetes that may be useful for all teachers and staff of educational centers who are in contact with these children.

What is diabetes?

Diabetes mellitus is a disease characterized by increased blood glucose levels, this situation is called hyperglycemia. This happens among other things, as a consequence of the decrease in the production of the hormone called insulin by the beta cells of the pancreas (type 1 diabetes mellitus)

Thanks to insulin the body utilizes the energy we get from food. In people with diabetes, glucose from food cannot be used properly by tissue cells, which leads to serious problems.

Diabetes is not contagious and can be controlled with insulin injections, a healthy balanced diet and exercise.

How type 1 diabetes can be treated?

The treatment for type 1 diabetes requires the administration of insulin by subcutaneous injection (sometimes requiring dosage adjustment based on blood glucose monitoring after eating or exercising made by a capillary blood glucose control)

When insulin has to be administered?

Most children must inject insulin several times a day, rapid-acting insulin before each meal (breakfast, lunch, snacks and dinner). In some cases when the child has an insulin pump connected to its body, they just need insulin before meals.

Children from 8 years of age onwards can perform glucose self-tests and inject insulin themselves, although ideally they should be supervised by an adult to make sure that they are injecting the right dosage and doing it correctly.

How to perform a blood glucose control?

Capillary glucose tests is made by extracting a drop of blood from a finger prick, with the aid of an automatic device and place it on a test strip that has previously been inserted into a glucose meter that will give us the result (all this material is brought in by the child daily). Currently children have a device inserted that continuously measures their glucose, allowing them to see their glucose levels on a reader or mobile phone, which can also be

seen remotely by teachers or parents. These devices have alarms set for complications such as excess or deficiency of glucose. The child should know how to solve these situations, either injecting insulin or eating carbohydrates.

Even with that monitoring could be necessary to perform self-tests with a glucometer before injecting insulin prior to meals at school, before exercising and in case of noticing hypoglycemia symptoms.

What type of food should be provided by the school?

In type 1 diabetic children´s meals or snacks, it needs to be remembered that the foods containing carbohydrates will raise their blood glucose levels. Nevertheless, they must not eliminate all carbohydrates. They need to eat a healthy balanced diet, similar to that of other children in the same age, with exception of fast-absorbing sugars (candy, sweets, drinks such as sodas and juices).

-It is recommended to hand out to parents the weekly school menu planning.

-It is important to respect the child´s meals and snacks times. Generally, they need to eat a second breakfast, coinciding with the mid-morning break time.

-Communication between school and the child´s family must be especially fluent.

Is physical exercise recommended?

A type 1 diabetic child can and must exercise equal to other children in his/her class. Exercise may cause blood sugar to drop. To avoid this, it is recommended to eat some carbohydrates before start exercising.

It is important that the PE teacher has easy access to sugary foods in case of hypoglycemia.

It is not convenient practice any sports in case of a recent decompensation in the day (hyperglycemia or hypoglycemia)

What adverse situations can a teacher find related to diabetes?

HYPOGLYCEMIA

Hypoglycemia is low sugar blood levels, which are less than 70/mg/dl.

Causes

- Excess in insulin dosage
- Insufficient carbohydrate intake or delaying too much in meal time.
- Over- exercise
- Vomiting and/or diarrhea

Symptoms

- Paleness of the face
- Erratic behavior
- Irritability
- Shaking

- Feeling very hungry
- Cold sweat
- Drowsiness
- Loss of consciousness

Treatment

In the middle of a hypoglycemia, the child must eat simple carbohydrates: sugar, fruit juice, or a sugary drink. Glucose levels will rise rapidly.

Steps to follow are:

1. **Offer food**

- Up to 4 years of age: 3-5 gr of sugar or 30-50 cl of juice.
- From 4 to 10 years old: 5-10 gr of sugar or 50-100 cl of juice.
- Over 10 years old: 10-20 gr of sugar or 100-200 cl of juice.

2. **Wait 15 minutes to give time the child to get better and after that, check how the child´s sugar levels are with another capillary blood glucose test.**

- If glycaemia is less than 70mg/dl it needs to be repeated step number one.
- If glycaemia is more than 70 mg/dl, the child must eat something containing slow-absorption carbohydrates, such as two biscuits, a glass of milk, yoghurt, a slice of bread etc.

Recommendations

- Have always sugar at hand.

- Verify glucose levels if hypoglycemia is suspected, if possible, self-monitoring or continuous glucose monitoring device.
- Administer sugar when there is the slightest doubt of hypoglycemia
- Sugar or juice should be administered without giving any other food with it.
- Once recovered, the child must eat or drink foods like milk, biscuits, yoghurt, fruit etc (slow absorption sugars) to be able to keep right glucose levels until next meal.
- Keep the child calm and at rest until is completely recovered.
- Accompanying the child while is in this situation, although he or she knows how to solve it.
- Remember that parents can know about the hypoglycemia on remote through the continuous monitor. Inform the parents and let them know the possible causes, if there is any suspicion.

In case of severe hypoglycemia

If the child does not respond with the sugar given or is unconscious, it has to be performed the following technique, authorized by parents:

1- Administer **Glucagon, by intramuscular injection** in arms, legs or buttocks or administer Baqsimi (inhaled).

The amount to be administered in case of intramuscular injection varies according to age.

- Younger than 2 years old: 1/3 vial

- From 2 to 7 years old: ½ vial
- Older than 7 years: 1 vial

2- **Call the parents and emergency services** to take the child to the nearest health center.

HYPERGLYCEMIA

Hyperglycemia is blood sugar levels beyond 180 mg/dl.

Causes

- Less insulin dosage than needed.
- Excessive carbohydrate intake
- Infectious disease
- Stress

Symptoms

Sometimes there are no symptoms. If the values are greater than 250 mg/dl, the most common symptoms are:

- Tiredness
- Headache
- Need to urinate frequently
- Intense thirst and hunger

Treatment

1- Administer insulin supplements based on parental information
2- Remember that parents can know the hyperglycemia situation remotely through the continuous glucose meter
3- Inform the parents and let them know the possible causes.

Recommendations

- Allow the child to leave the class to go to the bathroom so that he or she can urinate and drink water
- If vomiting or severe abdominal pain appears, notify the parents.

Possible psychosocial changes

The diabetic child is facing a chronic illness, which involves making many decisions every day. Depending on the age, the child will be able or not of making many of those decisions. It is subject to repeated blood glucose monitoring, several insulin injections on a daily basis, following a balanced diet plan with little flexibility in schedules and practicing exercise in a controlled manner with the aim of keeping blood sugar levels stable. We must not forget the threat of suffering hypoglycemia.

All this factors can have an impact on the child´s mood. Poor processing of grief in the face of illness, as well as a lack of support can cause a bad acceptance and the appearance of conflicts such as irritability, decreased school performance, passivity, sadness, lack of communication etc.

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