

**SUPPORTING  
CHILDREN WITH  
TYPE 1 DIABETES IN  
SCHOOL AND EARLY  
YEARS SETTINGS**

**A Collaborative Approach by The  
Children's Diabetes Team in Leeds and  
Education Leeds  
September 2007**

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# **OUR PHILOSOPHY FOR CHILDREN WITH DIABETES IN SCHOOL**

**Education is an essential part of a child's life.**

**Diabetes is a complex condition, which can affect or be affected by almost all daily activity.**

**Appropriate diabetes care in the school setting is essential for the child's immediate safety, long term well being and optimal academic performance.**

We recognise there needs to be collaborative working between the child family, school and the diabetes team

We recognise the importance of providing the best up to date treatment, delivered to the highest standard.

We will strive to support a school setting in which prioritises the child's immediate safety, long-term well being and academic performance.

We will act as the child's advocate wherever necessary.

We acknowledge collaborative working will support the schools day to day management of diabetes with respect to insulin injections, monitoring of the condition, food, physical activity and emotional well being.

We recognise the importance of anticipating pupil needs and creating an inclusive solution focused ethos.

We will consider the child's age, development and individual needs in all decision making.

Our ultimate goal is that children are facilitated to manage their diabetes according to their chosen management plan.

# INTRODUCTION

“Education is a valuable part of children’s and young people’s lives. Appropriate diabetes care in the school and day care setting is necessary for the child’s immediate safety, long-term well being, and optimal academic performance”(DoH 2007). Positive responses by schools and early years settings to a child’s medical needs will not only benefit the child directly, but can also positively influence the attitudes of their peers (DfES/DoH 2005).

The aim of this document is to inform about Type 1 Diabetes, help staff feel more comfortable about having a young person with diabetes in their school, and ensure that the child will be safe and supported at all times. For advice and information about individual children, schools should always involve the parents/carers of the child with diabetes, the school nurse and the diabetes care team. The Children’s Diabetes Nurse Specialist (CDNS), who will be a member of the diabetes care team, will be a central point of contact and should be able to advise the school.

The information within this resource should be considered alongside the Department for Education and Skills (DfES) guidance - Managing Medicines in Schools and Early Years Settings (2005). This document sets out a clear framework within which local authorities, local health trusts, schools and early years settings can work together to develop policies to ensure that children requiring medicines receive appropriate support. It takes account of the recommendations from the National Service Framework on Medicines for Children (2004) to ensure safe practice in the management of medicines for children, the new duties on local education authorities, schools and early years settings under the Disability Discrimination Act (1995), and latest medical advice. The publication includes forms that can be used as part of the school’s policy on administering medication.

This publication can be downloaded from [www.teachernet.gov.uk/publications](http://www.teachernet.gov.uk/publications)

# RECOMMENDATIONS AND RESPONSIBILITIES

## **Global Recommendations:**

- Diabetes should not alter a child's academic potential.
- Diabetes should not be the cause for being excluded from any type of activity nor the non-attendance at nursery, school or college.
- Education and the social integration within schools and colleges are of fundamental importance. (ISPAD 2000)

## **Schools and educational authorities:**

- Have a common law 'duty of care' to act in the same manner as a responsible parent, to ensure children with diabetes are healthy and safe.
- Must not treat young people with diabetes 'less favourably', without justification, than their peers who do not have diabetes.
- Must make 'reasonable adjustments' to ensure that children with diabetes are not put at a substantial disadvantage in comparison to those who do not have diabetes. (SENDA 2001)
- Should ensure that they have sufficient members of support staff who are employed and appropriately trained to manage medicines as part of their duties.
- The employer should provide written confirmation of insurance cover for staff who provide specific medical support.

## **Parent(s)/Guardians:**

- Have the prime responsibility for their child's health and are responsible for making sure that their child is well enough to attend school. If the child is acutely unwell, it is advised that he or she be looked after at home.
- Should provide schools and day care settings with sufficient information about their child's medical condition.
- Should arrange a meeting with the head-teacher before a child starts school, or when the child first develops diabetes. (DfES/DH 2005)

**The Health Care Team:**

- Should provide advice, support, education and training regarding all aspects of diabetes management to schools and day care settings on a regular basis.
- Should ensure that all schools have access to up-to-date resources and current recommendations regarding appropriate diabetes care for children with diabetes.

**An individualised diabetes health care plan should be agreed by the parent/guardian and child, the school or early years setting, and the health care team. The health care plan should describe the responsibility of all parties, address the child's specific needs and provide clear instructions for ongoing and emergency care. This should be updated regularly, and made available to all parties involved.**

(DH 2007)

# WHAT IS DIABETES?

Diabetes is a life-long condition in which the amount of glucose (sugar) in the blood is too high due to ineffective insulin secretion or insulin action, or both.

There are two main types of diabetes:

## **Type 1 Diabetes**

Most children will have Type 1 Diabetes, meaning they can no longer produce **insulin**, because the insulin producing cells in the **pancreas** have been destroyed. Without insulin, the child's body cannot use glucose properly. Type 1 diabetes is fatal without life-long insulin therapy.

## **Type 2 Diabetes**

Type 2 Diabetes is most common in adults, however the number of children with Type 2 Diabetes is also increasing, largely due to lifestyle issues and an increase in childhood obesity. People with Type 2 Diabetes still produce insulin however this may be insufficient for their needs, or the insulin produced may not be able to work effectively. Type 2 Diabetes can be managed with diet and exercise alone, but may require tablets or insulin.

The incidence of both Type 1 and type 2 Diabetes in children and adolescents is rising every year. There are other rare forms of diabetes, which are not described here, but information is available from the diabetes team if needed. The information in this folder will focus on Type 1 Diabetes.

# WHAT IS INSULIN AND HOW DOES IT WORK?

**Insulin** is the **hormone** that regulates the body's **blood glucose**. We know that insulin is the vital 'messenger', which converts the food we eat into energy. The sweet and starchy food we eat and drink (carbohydrates) are broken down into glucose (sugar), in the stomach; the glucose then passes out of the stomach into the bloodstream via the intestines. Insulin allows the glucose to be used as fuel for all our daily activities, even for sleeping, to ensure adequate growth and to repair cells when damaged. Insulin also transfers any extra glucose in the blood stream to muscles, fat cells and the liver to be stored until it is needed for energy. Extra energy is required for exercise and during emergencies, e.g. when we are unwell. Our bodies use up the energy stored in our muscles and liver on those occasions.

If the energy stores are empty and glucose is not available, the body burns fat for energy. This explains why **tiredness** and **weight loss** are common signs of diabetes.

Without insulin, the glucose from food and drink stays in the bloodstream causing the blood glucose to rise, some gets filtered through the kidneys and then passed out of the body in the urine. The glucose in the urine also takes water from the body along with it. This explains why many children **drink a lot and pass a lot of urine** before diagnosis. High blood glucose levels can also encourage infections.

**Classic symptoms of high blood glucose levels are:**

- **Frequent passing of urine**
- **Excessive drinking and thirst**
- **Weight loss**
- **Lethargy**

Without insulin treatment the disease progresses to a life-threatening condition marked by dehydration and a build up of acids in the blood. This is known as Diabetic Ketoacidosis (DKA).

# HOW IS DIABETES TREATED?

Children with Type 1 diabetes manage their diabetes with **insulin** taken via injection or using an insulin pump, regular **blood glucose monitoring** and carefully managed **diet** and **exercise**.

## INSULIN

Insulin has to be injected. If taken orally it would be broken down by the digestive enzymes and would therefore be ineffective.

Most children use a **pen device** making it easier for them to do their own injections. Insulin is injected into the fatty tissue on the thighs just under the skin. The thighs, upper arms, stomach and buttock areas are commonly used. Pen needles are often much thinner and shorter than people expect making the injection more comfortable.

Recent advances in insulin therapy have opened up new possibilities for designing and 'tailoring' individual treatment plans that better suit individual lifestyles.

### Multiple Daily Injections

Most children now inject insulin 4-5 times a day and therefore often need a lunchtime injection at school. They have a daily dose of long acting insulin, usually at bedtime; and then rapid acting insulin is given with breakfast, lunch and evening meal, and before large snacks. The child and family are taught how to calculate the insulin dose depending on the carbohydrate content of the food and the blood glucose level at that time.

Children who inject insulin at lunchtime may need a little extra time before lunch to accommodate their injection.

### Insulin pumps

Some children use an insulin pump instead of injections. An insulin pump is about the size of a pager and is connected by thin tubing to a small cannula inserted under the skin.

The pump delivers a small amount of insulin continuously and extra insulin can be given with food.

Multiple daily injections or insulin pump therapy are recognised as the best way of achieving good diabetes control and therefore promoting better health-outcomes for the child. They also allow the child or adolescent more freedom and flexibility in their lifestyle.

### **Twice daily Injections**

Some children have insulin twice a day although this is now uncommon treatment in Leeds. A mixture of short and long acting insulin is injected before breakfast and before evening meal and it is unlikely that these will need to be given during school hours. It is difficult to achieve good control of diabetes on twice daily injections.

### **Injecting at school**

Older children may be fully competent to manage their own diabetes whilst at school and should be encouraged to do so. The child may wish to carry their own diabetes equipment or may like it to be kept in a suitable place in school.

Some children may be able to give their own injections or insulin via pump, but supervision may be required.

Where children are unable to give their own injections, it may be necessary for an adult to administer the injection at school.

**Appropriate support and training from the Children's Diabetes Team must be provided where schools agree to give or supervise injections.**

**Each child should have an individual health care plan stating clearly their insulin requirements in school and individual responsibilities.**

# BLOOD GLUCOSE MONITORING

Blood glucose monitoring is a very important way of monitoring diabetes control, as it tells you how much glucose is in the blood at the time the test is carried out.

People who do not have diabetes have blood glucose levels that stay between 4 - 7mmols/l. **The target for people with diabetes is 4 – 8 mmols/l** however this is difficult to achieve particularly in the under 5's and during puberty.

Most children with diabetes will test their blood glucose levels several times each day and most children will need to test at least once whilst at school.

Doing a blood glucose test is simple enough for most school age children to be taught how to do this themselves. They will simply need a suitable place in school to do so. Some children may require adult supervision to carry out the test and/or interpret the results.

## Reasons for testing in school

- To assess diabetes control and allow appropriate adjustment of insulin doses.
- To identify high or low blood glucose levels in school and ensure appropriate action is taken.
- To promote effective management of exercise / activity in school.

## When to test

- **Before lunch:** Many children will do a blood glucose test immediately before lunch. This provides information to assist decision-making about the effectiveness of the insulin dose that was given at breakfast. If the child has insulin with lunch, this dose may be adjusted depending on the blood glucose level at that time.
- **Before activity:** Some children may wish to test before or after PE to help reduce the risk of a hypoglycaemic episode. A blood glucose test is definitely recommended before swimming and will help to determine how much additional carbohydrate (CHO) to give (see section on **exercise**).

- **Hypo (low blood glucose) symptoms:** It is always preferable to confirm a low blood glucose level by testing, as it can be difficult to differentiate between high and low symptoms. If blood glucose level is below 4mmol/l there is not enough glucose in the blood (see section on **hypoglycaemia**).
- **If the child is unwell:** It is essential to monitor blood glucose levels more frequently during illness. If a child becomes unwell at school and has a blood glucose meter in school, a test should be done immediately. If blood glucose level is above 14mmols/l there is too much sugar in the blood (see section on **hyperglycaemia**).

There may be other times (such as during exams, other periods of stress, or when reviewing insulin doses) when more frequent testing may be needed.

**The health care plan should state clearly when blood glucose monitoring is required.**

# EXERCISE, ACTIVITIES AND PE

Exercise is important for all children and young people, to reduce their risk of heart disease. People with diabetes are more at risk of heart disease than the general population so it is essential that children with diabetes are included in exercise activities in school safely. Staff supervising physical activity sessions must be aware that the child has diabetes and how exercise may affect them.

Exercise uses fuel (carbohydrate) and therefore lowers blood sugar. The risk in someone with Type 1 diabetes is that their blood sugar will go too low (hypoglycaemia), during or after exercise.

This can be prevented by:

- i) eating a small carbohydrate containing snack before exercise (e.g. biscuit, fruit, cereal bar)
- ii) eating a small carbohydrate containing snack or drink, before and/or during exercise if it is prolonged (more than 45 minutes)
- iii) ensuring usual school meals are not delayed after exercise
- iv) older children may alter their insulin around exercise and therefore may not need to eat

Children should have easy access to their hypoglycaemia treatment in the place where the activity is happening. Staff must be aware how to treat a hypoglycaemic episode.

Children should be encouraged to test their blood glucose before exercise, particularly swimming due to the added risk of water. Blood glucose levels should be between 8-14mmol to safely participate in sport, exercise or activities. If below 8mmol, give a snack as described above. If above 14mmol and/or showing signs of hyperglycaemia (drinking excessively or passing lots of urine), exercise should be avoided.

# SCHOOL MEALS

The right food is an important part of diabetes treatment, but there is no 'special' diet for someone with diabetes. The food eaten should be based on healthy eating principles, which everyone should follow. Children should eat regular meals each containing a starchy carbohydrate food (bread, cereals, potatoes, pasta or rice), avoid sugary drinks and too many sweet foods. Meals should contain some fruit or vegetables.

Children attending breakfast club should choose a cereal that preferably contains some fibre (Weetabix, Oatibix, Ready Brek, Porridge, Shreddies, Shredded Wheat, Just Right, Fruit and Fibre, Bran Flakes, Cheerios, Puffed Wheat), or is plain without sugar (Rice Krispies, Cornflakes). Sugary cereals should be avoided. Toast is also a good breakfast choice. Fruit, yogurts or fresh fruit juices are all suitable at breakfast if available.

Children with diabetes may either have a packed lunch or school meals. Either meal should contain at least one source of starchy carbohydrate (potato, pasta, rice, bread) and preferably a milk product or fruit. This helps to maintain blood glucose levels throughout the day. Drinks should be water, sugar free or diet drinks as best options. Occasionally children may have fresh fruit juice, smoothies or milkshake as part of their lunch.

Younger children with packed lunches should be supervised to ensure they do not swap items of their lunch with friends. Parents may have calculated the necessary dose of insulin based on the content of the lunch box. Older children may independently alter their insulin dose depending on what they eat, but healthy choices are encouraged.

Younger children on school meals will have a fixed dose of insulin as a 'best guess' when parents are absent at lunchtime. This dose will be decided by the diabetes team and parents. The Health Care plan will state the dose and timing of injection for an individual child. Very sugary puddings (e.g. syrup sponge and custard) should be avoided, as they will affect blood glucose levels. Younger children should be supervised to ensure they eat their school meal to prevent hypoglycaemia later in the afternoon. Older children may independently alter their insulin dose depending on what they choose, but healthy choices are encouraged.

# **HYPOGLYCAEMIA**

**(low blood glucose < 4mmol/l)**

Hypoglycaemia (hypo), or low blood glucose, occurs when the level of glucose in the blood is too low. This may be due to too much insulin, too little food, exercise, stress or warmer weather. Each child will have unique signs and symptoms when their blood glucose level is too low and these must be stated clearly in the health care plan. Children may become drowsy, feel dizzy/shaky, lose concentration, or behave erratically. Some children, especially those under five years may have little or no awareness of hypos therefore close supervision and frequent blood glucose monitoring may be needed. Children should be allowed to test their blood glucose level and access emergency glucose if a hypo is suspected. Do not ask the child to go to the first aid room/office to treat a hypo as this uses more energy and will make the hypo worse. Always treat the child in their present situation.

**Low blood glucose levels constitute a medical emergency and must be treated immediately. The health care plan should state clearly the action required.**

Teachers should be aware that cognitive function can be affected for several hours after an episode of hypoglycaemia, therefore children may not perform as well as expected academically.

Children taking examinations should be allowed to check their blood glucose level immediately before an exam and to take food and drink with them in case of hypoglycaemia. Prior to exams, a request for special consideration in relation to the impact of examination stress on blood glucose levels should be made in writing to the education authority/exam board.

# **HYPERGLYCAEMIA**

## **(high blood glucose > 14mmol/l)**

Hyperglycaemia, or high blood glucose, occurs when the level of glucose in the blood is too high. This may be due to too much food, not enough insulin, stress or illness. Children may become lethargic or behave erratically, and are often very thirsty and pass lots of urine. Children should be allowed to test their blood glucose level and to drink water and use the toilet freely if needed.

Prolonged hyperglycaemia can lead to a very serious condition called Diabetic Ketoacidosis (DKA). DKA can take from just a few hours to several days to develop but can be life threatening, so early recognition is essential.

**If the child is wearing an insulin pump, immediate action is required if a high blood glucose level is suspected in case of pump failure/blockage. The health care plan should state clearly the action required.**

**High blood glucose levels and illness constitutes a medical emergency. The health care plan should state clearly the action required.**

# SCHOOL TRIPS/RESIDENTIALS

Diabetes should not prevent a child from going on school trips or residential. Full participation and opportunities in all academic, social and sporting activities should be encouraged as development of self-esteem and confidence in such activities can have positive effects on the management of diabetes. (ISPAD 2000)

Children are likely to be excited and much more active during school trips and therefore diabetes management will need tailoring accordingly. Insulin doses may need to be reduced, extra carbohydrates may be required and additional supervision and blood glucose monitoring may be needed to prevent hypoglycaemia.

Careful planning is necessary and it is recommended that school staff meet with the child/parent(s)/guardian, and the diabetes team to discuss the child's needs. They can then ensure that appropriate action is taken to enable the child to participate fully and safely on school trips. A risk assessment may be needed and additional safety measures may need to be taken. For residential trips it is often useful if a copy of the itinerary and sample food menus are available at this meeting.

**The child's individual health care plan should also be reviewed at this time and a copy should be taken on the trip.**

## Useful Resources

- [www.jdrf.org.uk](http://www.jdrf.org.uk) Juvenile Diabetes Research Foundation  
Classroom toolkits (Key Stage 1&2) and assembly guides available to download.
- [www.diabetes.org.uk](http://www.diabetes.org.uk) Diabetes UK
- [www.teachernet.gov.uk/publications](http://www.teachernet.gov.uk/publications)  
DfES/DH (2005) *Managing Medicines in Schools and Early years Settings*.
- [www.childrenwithdiabetes.co.uk](http://www.childrenwithdiabetes.co.uk)  
UK Children With Diabetes Advocacy Group (2007) *Every Child Matters? Or do they?*
- **Department of Health (2007)** *Making Every Young Person with Diabetes Matter*
- **International Society of Pediatric and Adolescent Diabetes (ISPAD 2000)** *Consensus Guidelines for the Management of Type 1 Diabetes Mellitus in Children and Adolescents*.
- [www.hmsa.gov.uk/acts.htm](http://www.hmsa.gov.uk/acts.htm) *Special Educational Needs and Disability Act (2001)*

## Useful Contacts

- **Dr. P. Holland (Consultant – LGI)** Tel: 0113 3922840
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