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 2011

www.upbete.co.uk
CONTENTS

1. Our philosophy
2. Introduction
3. Recommendations and responsibilities
4. What is diabetes?
5. What is insulin and how does it work?
6. How is diabetes treated?
7. Blood glucose monitoring
8. Exercise, activities and PE
9. School meals
10. Hypoglycaemia (low blood glucose)
11. Hyperglycaemia (high blood glucose levels)
12. School trips/ residential
13. Supporting a young child with diabetes
14. Useful resources and contacts
15. Individual patient treatment agreements and healthcare plans.
The Leeds Philosophy for Children with Diabetes in School

We recognise education is an essential part of a child’s life.

We recognise that collaborative working between the child, family, school and the diabetes team will promote the best health outcomes for the child.

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

We will strive to support schools where the child’s immediate safety, long-term well being and academic performance are paramount.

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

We acknowledge collaborative working will support the schools in their day to day management of diabetes with respect to insulin injections, monitoring of the condition, food, physical activity and the child’s 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.

The Leeds Children’s Diabetes Team August 2011
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” (DH 2007). Positive responses by schools and early years settings to a child’s medical needs will not only benefit the child directly, but also can also positively influence the attitudes of their peers (DfES/DH 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

www.upbete.co.uk
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 favorably”, 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.
- Find ways to help the student feel less different
- Respect the CYP right to privacy and confidentiality
- Communicate regularly with the CYP and parents and health care professionals
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 and emergency contact numbers.
- Should arrange a meeting with the head-teacher before a child starts school, or when the child first develops diabetes.
  
  (DfES/DH 2005)

- Provide all the necessary equipment, and agree a system for school to alert you when supplies are getting low.
- Clearly communicate any changes in diabetes management
- Involve the CYP in discussions at an age appropriate level.

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 healthcare 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)

www.upbete.co.uk
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 an autoimmune condition which requires 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 some of their own insulin however this may be insufficient for their needs, or the insulin produced may not be able to work effectively which is called “resistance”. Type 2 Diabetes can be managed with diet and exercise alone, but may require tablets or even 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 bloodstream 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
- Sudden weight loss
- Lethargy

www.upbete.co.uk
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 or an insulin pump. 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 3-5 times a day and therefore often need a lunchtime injection at school. They have a daily dose of long acting insulin (basal dose), usually at bedtime; and then rapid acting insulin is given with breakfast, lunch and evening meal, and before large snacks (bolus dose). 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 or after 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 small mobile phone and is connected by thin tubing to a small cannula inserted under the skin. The pump delivers a small amount of insulin continuously (basal dose) and extra insulin (bolus dose) should be given with food. A person using an insulin pump may need to test their blood glucose levels more frequently.

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 becoming less commonplace. 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. There will be less flexibility with mealtimes and quantities and it can be more 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 especially for the Primary school age group. 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 administer or supervise insulin delivery.

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 usually before lunch.

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. Checking blood glucose involves pricking the finger to get a small drop of blood. This is then placed on a special test strip in a glucose meter. A reading appears within a few seconds and this is used to guide how much insulin is required.

[www.upbete.co.uk](http://www.upbete.co.uk)
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 3.9mmol/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.

A person with diabetes should never be made to feel guilty if their blood glucose is out of range as many things can affect the result such as growth and development as well as stress and illness.

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

A person with diabetes should never be sent to the school office alone and where possible should be allowed to check and treat in the classroom.
If there is no blood glucose meter available it is always safer to treat a low blood glucose level.

Continuous Glucose Monitoring

This is a relatively new method of continuously checking the glucose level (every 5 minutes). This is a device which may be part of the insulin pump or look similar to one. In addition a small transmitter is worn and a sensor is inserted under the skin. This is usually worn intermittently for approximately 6 days although a few children wear a sensor continuously. This device can reduce the number of finger prick tests required and allow families to finely tune diabetes management.
Effects of Exercise Illness, Stress and Growth on blood sugar levels

Exercise

Exercise is important for all children and young people as per WHO recommendations, to improve cardio-respiratory and muscular fitness as well as bone health. 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 increases the sensitivity of muscles to insulin therefore after exercise it usually takes less insulin to balance the carbohydrate consumed. Exercise uses fuel (carbohydrate) and therefore lowers blood glucose. The risk in someone with Type 1 diabetes is that their blood glucose level will go too low (hypoglycaemia), during or after exercise. PE lessons at school sometimes focus on learning skills and the physical intensity is low. Having a plan for both types of PE lesson can be helpful.

Low blood glucose levels 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

www.upbete.co.uk
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 4-10mmol/L to safely participate in sport, exercise or activities. If below 5mmol/L, give a snack at the beginning of the activity. If above 14mmol and/or showing signs of hyperglycaemia (drinking excessively or passing lots of urine), exercise should be avoided.

**Illness and stress**
Illness and stress on the other hand can cause high blood glucose levels. This can cause poor concentration and therefore affect academic performance. Students may need more time during exams or opportunities to revise a topic once blood glucose levels are in target.

**Growth spurts**
Growth spurts can suddenly affect the balance of blood glucose levels. When this happens during puberty this can have even more of an impact as it adds an incremental challenge.
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. The ‘Eatwell Plate’ provides appropriate guidance for diabetes as well as general healthy eating. 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, Oatifix, 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, milk and 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, no added sugar 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.

www.upbete.co.uk
Younger children on school meals will have a fixed dose of insulin as a ‘best guess’ when parents are absent at lunchtime. Some children will have a carbohydrate counted meal, ensuring the same amount of carbohydrate each day to match the dose. This is arranged via the dietitian and school meals co-ordinator for Leeds Education Authority centrally provided meals, if acceptable to the family. The fixed 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, unless part of a tailored meal plan, 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.

A small percentage of children with type 1 diabetes also have Coeliac disease, another incurable lifelong condition, which can only be treated by a gluten free diet (GFD). Gluten is a protein found in wheat, rye and barley. In someone with Coeliac disease, the body reacts inappropriately to this protein and the gut becomes damaged every time gluten is eaten. If untreated, Coeliac disease can cause stomach aches, diarrhoea, anaemia and weakened bones due to poor nutrient absorption and growth failure. A gluten free meal must be provided at lunchtime either as a packed lunch or via school meals service. Parents may provide gluten free products (e.g biscuits) as part of hypo treatment.
HYPOGLYCAEMIA
(low blood glucose < 3.9mmol/l)

Hypoglycaemia (hypo), or low blood glucose, occurs when the level of glucose in the blood is too low and requires immediate action. 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
Dizziness
Shakiness
Loss of concentration,
Behaving irrationally
Poor coordination
Drowsiness.

Severe hypo symptoms
Unconsciousness
Convulsions

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.

www.upbete.co.uk
Low blood glucose levels constitute a medical emergency and must be treated immediately with fast acting glucose. 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.

High blood sugar generally does not put the person with diabetes in immediate danger. However high blood glucose levels over long periods of time can lead to serious complications. The complications for diabetes include eye disease, kidney disease and nerve disease. Very high blood sugars over a few days can lead to a very serious condition called Diabetic Ketoacidosis (DKA). DKA occurs when the cells can’t get the energy they need from glucose and the body begins to burn fat for energy. This causes the release of ketones which are dangerous if they build up in the blood. DKA can be life threatening, so early recognition is essential.

[www.upbete.co.uk](http://www.upbete.co.uk)
The signs of high blood sugars are:-

Thirst
Going to the toilet frequently
Blurred vision
Stomach pains
Increased hunger
Nausea and vomiting
Drowsiness
Confusion
Fruity breath
Lethargy/ exhaustion
Changed breathing pattern.

Children should be allowed to test their blood glucose level and to drink water and use the toilet freely if needed.

Additional insulin may be indicated but must be determined by the parent or carer. Checking for the presence of blood ketones can help to determine the urgency of this.

Stenuous exercise should be avoided if the blood glucose is >14mmol/l.

**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.**
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. Menus can be carbohydrate counted in advance of the trip to help decision making around insulin doses.

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

Dr. F. Campbell Consultant              Tel: 0113 2064996
Dr. P. Holland Consultant              Tel: 0113 2064996

Children’s Diabetes nurse Specialists  - SJUH       Tel: 0113 2064996

Wendy Sewell     07786 250730   gwendoline.sewell@leedsth.nhs.uk
Carole Gelder    07810 754228   carole.gelder@leedsth.nhs.uk
Julie Cropper    07786 250727   julie.cropper@leedsth.nhs.uk
Carol Bacon      07786 250743   carol.bacon@leedsth.nhs.uk
Jane Exall       07786 250744   jane.exall@leedsth.nhs.uk
Melani Hill      07887 954603   melani.hill@leedsth.nhs.uk
Caroline Mullier 07786 250725    caroline.mullier@leedsth.nhs.uk

Frances Robson (Children’s Diabetes Dietitian)
Tel: 0113 3923507 (Mon-Fri)
E: frances.robson@leedsth.nhs.uk

Tracey Swinford (School Nurse – Lead for Diabetes)
Tel: 0113 2951538       E: tracy.swinford@nhs.net

Useful Resources

www.jdrf.org.uk Juvenile Diabetes Research Foundation Classroom toolkits (Key Stage 1&2) and assembly guides available to download.
www.diabetes.org.uk Diabetes UK
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.upbete.co.uk