

# Children and young people's diabetes

**A London guide for teachers and parents of children and young people with diabetes: pre-school, early years, primary and secondary schools**



# Who is this document for?

This document is intended to enable schools to manage children and young people with diabetes effectively in a school setting.

Recommendations and guidelines contained within are derived from clinical practice at University College London Hospitals, the Hillingdon Hospital and from contributions from stakeholders.

Due for revision: December 2017



**DIABETES UK**  
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## SUMMARY OF RECOMMENDATIONS

- Every child with diabetes should have an Integrated Healthcare Plan (IHP)
- Each school should have an up-to-date medical conditions policy
- Children and young people should have appropriate supervision depending on their individual needs
- Children aged 5 and under will need a named adult and 1:1 support in the absence of parents
- Primary schools (6 years+) Children and Young People require support to manage their diabetes in school in line with the Children and Families Act 2014; They may need 20 plus hours tailored to the need, age, and age at diagnosis of the child
- In secondary school the student will be largely independent but may require intermittent support.

# Diabetes at school

Having diabetes has implications for a child's schooling and learning. It impacts on care given within schools and early years settings. Appropriate diabetes care is necessary for a child's immediate safety, long-term wellbeing, and optimal academic performance.

While some older children may be fully independent with their diabetes care, younger children, those with learning difficulties or newly diagnosed are likely to need support and assistance from school staff during the school day to help them to manage their diabetes in the absence of their parents.

The 2010 Children, Schools and Families Act and the Children and Families Act 2014 introduced a legal duty on schools to look after children with medical conditions. This includes children with diabetes and so it is essential that all school staff and those who support younger children have an awareness of this medical condition and the needs of pupils during the school day.

## Get to know diabetes

### KEY FACTS

- Diabetes is a condition where a person's normal hormonal mechanisms do not control their blood sugar levels.
- About one in 700 school-age children has diabetes.
- Children with diabetes normally need to have daily insulin injections, monitor their blood glucose level and eat regularly.
- Diabetes in children and young people is increasing.
- In London there are approximately 4000 children and young people with type 1 diabetes
- Over 31,500 young people under the age of 19 in the UK are diagnosed with diabetes. Of these, about 95% have type 1 diabetes (insulin deficiency) whereas the remainder are largely type 2 where insulin is produced but does not act properly.
- Insulin is the treatment for type 1 whereas tablet therapy can often be used to manage type 2.
- Managing the demands of diabetes in daily life can be challenging: currently only 18.4% of children in the UK are achieving the recommended level of blood sugar (glycaemia) control.

# Be diabetes-ready for school

If a child is newly diagnosed with diabetes, their parents and the school nurse should inform the school as soon as possible so arrangements can be made. If starting a new school, it should be as soon as the place has been confirmed. Parents may wish to arrange an introductory meeting with the school's head teacher or responsible member of staff before their child enrolls or when the child first develops diabetes.

## Individual healthcare plan (IHP)

When a child is first diagnosed, the relevant school staff (for example head teacher, nominated school staff or special educational needs coordinator) with the parents, the paediatric diabetes specialist nurse, school nurse (if available) and the child, where appropriate, will need to draw up a healthcare plan that sets out what support the child will need in school.

An example can be accessed at:

- University College London Hospitals

[www.uclh.nhs.uk/OurServices/ServiceA-Z/CYPS/PDIAB/Pages/Takingcontroldiabetes.aspx](http://www.uclh.nhs.uk/OurServices/ServiceA-Z/CYPS/PDIAB/Pages/Takingcontroldiabetes.aspx)

- Diabetes UK

[www.diabetes.org.uk/Guide-to-diabetes/Schools/IHP-a-childs-individual-healthcare-plan](http://www.diabetes.org.uk/Guide-to-diabetes/Schools/IHP-a-childs-individual-healthcare-plan)

## What to include in an individual health plan

It should include the following details:

- Written permission from the parent/carer and the head teacher must be obtained for insulin to be administered by a member of staff, or self-administered by the child during school hours.
- The prescribed insulin, including the dose to be given, the procedure for injecting via a pen device or an insulin pump.
- Who will help the child with medication and blood glucose testing and where these tasks can be undertaken safely, ensuring the dignity of the child or young person is maintained.
- What help the child needs with diabetes management – what they can do themselves and what help they need.
- Descriptions of the child's symptoms of hypoglycaemia and hyperglycaemia and what staff will do if either of these occurs. The plan should also make clear when a parent or carer should be contacted, and under what circumstances an ambulance should be called.
- When a child needs to eat meals and snacks. If a child needs to go to the front of the lunch queue or have other arrangements at lunchtime these should be noted.
- What should be done before, during, and after physical education (PE) lessons. This might include the need for blood glucose testing, a snack or correction bolus if necessary and disconnecting a pump (if using one).
- Where insulin and other supplies will be stored and who will have access to them. It should also include what supplies will be needed, how often the supplies should be checked and by whom.
- What to do in an emergency, including who to contact.
- Any specific support needed around the child's educational, emotional and social needs, e.g. how absences will be managed, support for catching up with lessons or any counselling arrangements.
- The names of trained members of staff along with description of training undertaken.
- What plans need to be put in place for exams / tests (if appropriate).
- What plans need to be put in place for any school trips (including overnight) or other school activities outside of the normal timetable.
- Date for review of the plan.

Once the people involved in drawing up this plan are satisfied, the plan should be signed by the school, the parents and a member of the child's diabetes team. This should then be available to all relevant members of staff. This should be reviewed at least annually and more frequently if needed.

# Detailed procedures and advice for schools

## BLOOD GLUCOSE TESTING

The effectiveness of diabetes management is assessed through testing the blood glucose level. Blood glucose targets are set at levels designed to protect each child or young person's safety, on a day-to-day basis for their long term health. Persistent hyperglycaemia (a raised blood glucose over 14 mmol/l) increases the risk of developing long term problems for nerves, kidneys, blood vessels and eyes.

In general, it is expected that young people test their blood glucose levels at a minimum of break time, pre-lunchtime, pre and post-sport and before leaving school to go home. This is done using a finger prick device (with a self-contained drum of needles / lancets). These devices are intended for self-monitoring of an individual person only. The results need to be interpreted and actioned upon by either the young person (if old enough), parents, or in the school setting, trained carers if outside the target range (either less than 4mmol/l or greater than 14 mmol/l). Details for the individual can be found in the child's individual health plan.

Some young people using insulin pump therapy may use continuous glucose monitoring (CGM). These devices will show current blood glucose levels and sound an alarm when glucose levels are outside of range or predicted to go outside of the target range within a certain time period.

## INSULIN CALCULATION (USING EITHER A PUMP OR BOLUS CALCULATOR)

Children and young people with diabetes need to balance their insulin with the food that they are eating, the current blood glucose level, and the exercise that they are undertaking. This can be done manually, automatically, using bolus calculators in blood glucose meters or using the insulin pump. Insulin needs to be given with all food, snacks and drinks containing carbohydrates unless it is treatment for hypoglycaemia or being used to prevent low blood sugar (hypoglycaemia) when undertaking exercise. Details for the individual can be found in the individual health plan.

## CARBOHYDRATE COUNTING

Children and young people need to eat a healthy and balanced diet. Foods contain varying amounts of carbohydrate, protein, fat, vitamins, minerals and water. Carbohydrates in foods raise blood glucose levels quickly. Therefore, the carbohydrates eaten or drunk needs to be matched with insulin and this is done by 'carbohydrate counting'. Children with diabetes can have either packed lunches or school meals. The parents can calculate the amount of carbohydrates in packed lunches. For those wanting to have school lunches, the parents and diabetes team dietitian can help calculate the carbohydrate content using the school menus and contacting the staff providing the school meals. Schools should supervise younger children at lunchtimes to ascertain how much of their meal they have eaten and the carbohydrates consumed. This is used to decide the amount of insulin the young person needs.

## ADMINISTRATION OF INSULIN (USING EITHER A PEN OR PUMP)

For a child with diabetes, insulin is delivered as either 'basal' insulin or 'bolus' insulin. The basal insulin is the long acting (slow) insulin injection given in the morning and/or evening. On a pump, basal insulin is the background insulin delivered continuously via the insulin pump. Details for the individual can be found in the child's IHP.

Bolus (fast acting) insulin needs to be given whenever a child is having a meal or snack and whenever the blood glucose level rises higher than the target range. This insulin is given by either a pen device or by pressing buttons on the insulin pump (details for the individual will be found in their individual health plan).

## ACTIVITY AND EXERCISE WITHIN THE SCHOOL ENVIRONMENT

It is important for their long term health that children with diabetes take part in PE and other physical activity. The impact of activity on blood glucose levels will vary depending on the intensity, duration and how close the activity is to insulin dosages given. Planning is required in relation to additional blood glucose monitoring before and after activity or consuming additional carbohydrates. If using an insulin pump, decisions are necessary relating to whether the pump should be disconnected or temporary basal rates set.

## AWARENESS OF THE IMPACT OF STRESSES WITHIN THE SCHOOL ENVIRONMENT

Stress (including anxiety about possible bullying or pressure related to exams) can also impact on blood glucose levels. This fluctuation may be outside the young person's control and therefore needs to be taken into consideration when assessing performance. High blood glucose levels will make students feel tired, thirsty, need to urinate frequently and generally make concentration difficult. In contrast low blood glucose levels will have a behavioural and cognitive impact both at the time when they are found to be low and for up to 3-4 hours after the level has normalised. Low levels are likely to affect mental flexibility, planning, decision making, attention to detail and response times.

## ASSISTANCE IF UNWELL

At all ages, young people with diabetes may require help to perform a blood glucose test when the blood glucose is low. In addition, many young people with diabetes require a reminder to eat or drink during hypoglycaemia and must not be left unsupervised until such treatment has taken place and the blood glucose value has returned to the normal range.

## EMERGENCY MANAGEMENT OF SEVERE HYPOGLYCAEMIA (LOW BLOOD GLUCOSE LEVELS)

Hypoglycaemia is often accompanied by specific signs and symptoms such as trembling, fast heart rate, pallor, sweatiness and/or difficulty concentrating, blurred vision, difficulty hearing, slurred speech, poor judgement, problems with short term memory (neurological dysfunction). The blood glucose level at which signs and symptoms occur may vary according to the individual. Young people may also exhibit behavioural or mood changes when their blood glucose fall but remain within or above normal range.

The severity of hypoglycaemic episodes can be described on a scale of mild, moderate and severe.

If a student has experienced severe hypoglycaemia within the previous six-month period, it may be recommended that the school keep Glucagon on the premises. Glucagon is a hormone that raises blood glucose rapidly. Additional advice will be provided by the diabetes team and volunteers or first aiders will need to be trained how to give this.

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*In severe hypoglycaemia, the young person may not be able to assist in their own care, and may become semi-conscious or unconscious. Urgent treatment is required but it is unsafe to give any treatment by mouth. In this instance the school should ring 999 and then contact the parents.*

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# Responsibilities for helping children with their medical needs in school or early years setting

## HEAD TEACHER

We recommend that the head teacher of the school or early years setting is responsible for ensuring:

- The school has an up-to-date medical conditions policy statement in place. A template can be accessed at: [www.diabetes.org.uk/Documents/Guide%20to%20diabetes/Schools-campaign/make-grade-medical-conditions-policy-sample-0614.pdf](http://www.diabetes.org.uk/Documents/Guide%20to%20diabetes/Schools-campaign/make-grade-medical-conditions-policy-sample-0614.pdf)
- Policy states the designated senior member of staff and the procedures for children and young people who have been diagnosed with diabetes
- All school/setting employees are aware of a child having diabetes, being able to obtain the child's individual health plan in the school setting and know how to assist them when necessary in a diabetes emergency (especially hypoglycaemia)
- A minimum of two staff members are selected for training in the management of each individual child/young person's diabetes. These members of staff may be requested to supervise or perform blood glucose testing, to supervise or perform calculations of insulin doses, to supervise or perform insulin injections using an insulin pen and/or to supervise or perform giving an insulin dose using a subcutaneous insulin infusion pump, as outlined in the IHP. These staff may be trained through group sessions hosted by the local diabetes team or individually at each school
- Safe storage of diabetes containers (containing, if necessary, insulin injection devices as well as hypoglycaemic treatment) is established, together with the safe disposal of used needles / "sharps"
- The school and its employees do not discriminate against children and young people with diabetes, thereby enabling young people with diabetes to participate fully in all aspects of school life, including physical and extra-curricular activities

Visit [Diabetes UK website](http://www.diabetes.org.uk) for more information:

[www.diabetes.org.uk/Guide-to-diabetes/Schools/School-staff/Responsibilities-headteachers-school-governors-responsible-bodies](http://www.diabetes.org.uk/Guide-to-diabetes/Schools/School-staff/Responsibilities-headteachers-school-governors-responsible-bodies)

## SCHOOL STAFF

We recommend trained members of school staff are responsible for:

- Either carrying out or supervising blood glucose testing just before a meal or snack according to the training received
- Carrying out or supervising insulin dose calculation with meals according to the training received
- Carrying out or supervising the meal-time insulin via pen or insulin pump according to the training received
- Diabetes staff recommend an initial practice period of 2 weeks, for the volunteer member of school staff to observe the parent for one week and then the parent observing the volunteer, until both are confident.

Visit [Diabetes UK website](http://www.diabetes.org.uk) for more information:

[www.diabetes.org.uk/Guide-to-diabetes/Schools/School-staff/Responsibilities-trained-staff](http://www.diabetes.org.uk/Guide-to-diabetes/Schools/School-staff/Responsibilities-trained-staff)

## CHILD/YOUNG PERSON

Children and young people should be allowed, as much as possible, to manage their own diabetes at school with relevant parental consent, to the extent that is appropriate for their child's developmental stage and his or her experience with diabetes. The extent of a child or young person's ability to participate in their own diabetes care should be risk assessed and agreed upon by senior school staff, the parent/carer and the paediatric diabetes nurse specialist (PDNS). The ages at which a child or young person are able to perform self-care tasks are very individual and variable, and the capabilities and willingness to provide self-care should be acknowledged in each child's IHP.

Visit [Diabetes UK website](http://www.diabetes.org.uk) for more information:

[www.diabetes.org.uk/Guide-to-diabetes/Schools/Children](http://www.diabetes.org.uk/Guide-to-diabetes/Schools/Children)

## PAEDIATRIC/ADOLESCENT DIABETES TEAM

The diabetes nursing team will offer training to the volunteers from the school setting, to include (as required by the individual health plan).

- training on the individual health care plan
- teaching of supervision or performing of blood tests
- teaching of supervision or performing calculation of insulin doses
- teaching of supervision or performing insulin injections
- teaching of supervision or performing of administration of an insulin dose using an insulin pump
- assess competency of each individual volunteer in required tasks
- help with planning of school residential trips.

### Training

Annual training should be provided by the diabetes team in September at the start of the new term. This may be through group sessions or individually at each school. This will include:

- overview of diabetes
- treatment of hypoglycaemia and hyperglycaemia
- managing exercise
- when to seek help
- documentation and training requirements
- delivering insulin and monitoring blood glucose.

The diabetes team will provide certification of completion of training. Additional training can be provided on request of the school.

## PARENT OR CARER

A parent or carer who has legal responsibility for the young person who has diabetes will liaise with the Head of the School/establishment and the Paediatric Diabetes Nurse Specialist (PDNS) to provide the school/establishment/ setting with adequate, up-to-date information about the young person's diabetes and treatment.

They will be responsible for providing the school with:

- Sufficient information about their child's diabetes and how it is managed, including what help they will need and how any treatment changes and day-to-day events might affect their diabetes at school.
- All materials and equipment necessary for diabetes care tasks, including blood glucose testing and insulin administration (if needed). The parent/carer is responsible for the maintenance of the blood glucose testing equipment (i.e. cleaning and performing controlled testing per the manufacturer's instructions).
- Supplies to treat hypoglycaemia i.e. source of glucose and a supply of Glucogel (a gel preparation of glucose that can be applied to the gums when blood glucose is low).
- Information about their child's meal/snack schedule. The parent should work with the school to coordinate this schedule with that of the other pupils as far as possible. For young children, instructions should be given on the individual health plan for when food is provided during school parties and other activities.
- Information about the carbohydrate content of the child's lunch if they are taking a packed lunch. If the child is eating school meals the catering company will need to provide the information to the person calculating the carbohydrate content. A 'carbs and calories book' may help to work it out.
- Emergency phone numbers for the parent/guardians and the diabetes team so that school/establishment personnel can make contact in times of emergency or to answer queries.
- As appropriate the parents may provide specific advice for school staff regarding school trips, exams and so on for inclusion in the IHP.

Where volunteers are being trained to supervise or perform any diabetes tasks the parent or carer will sign the IHP to show that they have agreed to this arrangement.

Visit [Diabetes UK website](http://www.diabetes.org.uk) for more information:

[www.diabetes.org.uk/Guide-to-diabetes/Schools/Parents](http://www.diabetes.org.uk/Guide-to-diabetes/Schools/Parents)

# Recommendations from the London Policy Guideline Group

These are general guidelines only and it should be remembered that children have differing support needs depending on their age, stage of diabetes and whether they have any learning difficulties.

## Children aged five years and under

Child or young person's involvement	Care required	Funding
<p>The preschool child is unable to perform any diabetes tasks.</p> <p>They will need a named adult to undertake these tasks in the absence of their parents.</p>	<p>A child will need:</p> <ul style="list-style-type: none"> <li>■ An adult to administer insulin (via a pen or pump).</li> <li>■ An adult to carry out, monitor, record and act on blood glucose readings.</li> <li>■ Additional observation and/or intermittent problem solving interventions when the signs and symptoms of diabetes ensue.</li> <li>■ Supervision will be needed to assess for signs and symptoms of hypo and hyperglycaemia.</li> <li>■ Supervision at meal or snack times to assess how much carbohydrate consumed.</li> <li>■ Staff should be trained in interventions required if a young person is hypoglycaemic.</li> </ul>	<p>The child will need one-on-one support of some description, but how this will look will vary from child to child.</p> <p>There are different ways one-on-one support can be provided depending on an individual's need. This could be from a named member of staff who is trained and available to help through the day as needed. Alternatively it could be from a trained person who only has responsibility for the child and is physically with them at all times throughout the day.</p> <p>If it is decided by the school and/or child's parent that the second option is appropriate, this can be funded through an Education Health and Care Plan from the local authority.</p>

## Primary school aged six years and up

Child or young person's involvement	Care required	Funding
<p>The primary school aged child is unable to manage independently. The care is such that a child requires adult support to manage their diabetes in school.</p> <p>They should be expected to cooperate with staff in ensuring that diabetes tasks are performed within school (unless hypoglycaemic).</p>	<p>A child will need:</p> <ul style="list-style-type: none"> <li>■ An adult to administer insulin (via a pen or pump).</li> <li>■ An adult to monitor record and act on blood glucose readings and in some cases to carry out blood glucose testing.</li> <li>■ Supervision at meal or snack times to assess how much carbohydrate consumed.</li> <li>■ Adult supervision if the child is hypo and hyperglycaemic unaware.</li> <li>■ Staff trained in interventions required if a young person is hypoglycaemic.</li> </ul>	<p>This level of support should be provided by the school, in line with the Children and Families Act 2014, and funded from the schools existing budgets.</p> <p>The hours that need to be provided should come from the 20+ programme. In this programme the hours of support are averaged at 20 hours per week over the 6-7 years of primary school. The hours should be front loaded so that 35 hours per week are provided at the start in reception or after diagnosis and then gradually reduced so that by Year 6 the number of hours per week is approximately five. The specific number of hours a child needs will vary depending upon the needs of the child and should be agreed on an individual basis.</p>

## Secondary school

Child or young person's involvement	Care required	Funding
<p>The student requires regular but time limited adult support to supervise/oversee largely independent management of their diabetes.</p>	<ul style="list-style-type: none"> <li>■ Reminders to administer insulin and test blood glucose levels.</li> <li>■ Staff should be trained in interventions required if a young person is hypoglycaemic.</li> <li>■ Support to allow blood glucose testing in class and treatment of hypoglycaemia.</li> <li>■ More intensive support and supervision for periods of time if the young person is struggling to manage diabetes and or during exams and residential trips.</li> </ul>	<p>This level of support should be provided by the school, in line with the Children and Families Act 2014, and funded from existing budgets.</p>

# More detailed medical advice

## TRANSITION TO INSULIN PUMP THERAPY

Some children and young people with diabetes are managed by a continuous supply of insulin (CSII) through a pump which they wear. In line with National Institute for Health Care Quality and Excellence (NICE) guidelines this will be offered at diagnosis to children under the age of 5 years. For those children already diagnosed with diabetes, insulin pump therapy can be initiated at any point in the year, once the child and family meet a number of criteria. In order to ensure that systems can be put into place to provide adequate support within early years and school settings, the following will be followed:

- Parents inform school of diagnosis together with an anticipated return to school date.
- Newly diagnosed and started on pump therapy at diagnosis.
- Decision to transfer from multiple daily injections to pump therapy.
- Parents to inform school that pump therapy is starting at least one month before it starts.
- School medical management plan to be completed and signed off within two weeks of pump therapy initiation.
- Head teacher identifies two volunteers to support the child.
- Volunteers may have the opportunity to attend a pump education day at the local hospital or will have individualised training from the paediatric diabetes specialist nurse (PDSN).
- Parents responsible to support volunteers at the school for the first one to two weeks.

## DIABETES AND COGNITIVE FUNCTION

There are a number of diabetes-related variables that have the potential to impact on brain development and as a consequence, on neuropsychological functioning and thus function within a school environment. These variables operate independently of one another and have different pathological mechanisms.

The young brain is a dynamic organism with specific structural and functional developments occurring at predetermined times and, as with any issue of brain function, the consequences vary depending on the timing. Children, with early age at the onset of diabetes, and a history of severe hypoglycaemia, may develop the most significant adverse neuropsychological effects.

Overall differences in intellectual functioning between diabetes groups and controls tend to be small, with most children continuing to function within the average range. However, the differences are enough to impact on learning in the classroom and its impact on some children can be very significant. The subtle nature of the differences also means that children's difficulties are at greater risk of being overlooked.



## HYPOGLYCAEMIA AND SEIZURES (FITS)

Approximately 31% of children with type 1 diabetes experience severe hypoglycaemia at some point due to the difficulty in balancing insulin injections with activity and diet in a growing child. Very young children may be unable to identify symptoms or to verbalise them, and as activity levels are harder to predict, they are at greater risk of severe hypoglycaemic episodes. This is especially problematic as the early years are also the time of most rapid brain development with critical periods for the development of various skills and abilities.

Learning and memory are the abilities most likely to be affected by hypoglycaemia as well as motor speed, visuospatial skills, attention, memory and executive function.

Mild symptomatic or asymptomatic hypoglycaemic episodes, which all children with diabetes experience, may cause transient cognitive deficits especially in planning and cognitive flexibility, sustained attention and reaction time with a cumulative, negative effect on the child's performance in the classroom setting.

Children diagnosed at a young age may have more seizures due to the behavioural and medical challenges of disease management in young children.

Seizures are related to the smallest overall cognitive effects but may be greater for children who have chronic poor metabolic control (who have been shown to have lower scores on psychometric tests in individual studies).

## HYPERGLYCAEMIA

Repeated hyperglycaemia causes a rise in a blood test marker known as HbA1c. A persistent raised HbA1c demonstrates poor control of sugar levels over previous three months. This contributes to an increased risk of complications of diabetes, including problems with eyes (retinopathy), kidneys (nephropathy) and tingling in hands and feet due to nerve damage (neuropathy). Extreme hyperglycaemia due to lack of insulin can cause diabetic ketoacidosis (DKA). This is a condition that occurs when insulin is missing and the body compensates by breaking down fat and creating acids in the blood. This can lead to acute illness, loss of consciousness and even coma or death. Severe DKA may result in central nervous system damage. Whilst it was originally thought that non-DKA episodes of hyperglycaemia were likely to have little or no effect on cognitive function, research is now beginning to suggest that there may indeed be consequences through disruption of brain structures and neurotransmitter regulation in the developing brain.

Children with elevated sugar levels have problems with memory and executive functioning, fine motor control and motor reaction tasks. Hyperglycaemia has also been found to specifically affect verbal intelligence and spatial intelligence, information processing speed and sustained attention.



# More detailed medical advice (continued)

## INDIVIDUAL VARIABLES – AGE AT ONSET OF DIABETES

Hypoglycaemia and hyperglycaemia have different effects on cognitive function determined partly by the amount of exposure during development but not age of onset. The most potent predictor of learning is disease duration. Cumulative and chronic exposure to the metabolic abnormalities typical of diabetes alone is a major risk factor related to poorer learning over time. Episodes of severe hypoglycaemia significantly predicted lower verbal and full scale IQ at six years after diagnosis. Age of exposure to hypoglycaemic events was related to reduced verbal and visual delayed recall and spatial intelligence, rather than age at onset of diabetes.

## DEVELOPMENTAL COURSE

The brain is thought to be particularly vulnerable to the effects of hypoglycaemia. Although children with diabetes are usually older when they experience hypoglycaemia it can happen at any age and it appears that cognitive effects, although mild, appear relatively quickly following diagnosis.

Puberty is considered an independent risk factor for the complications of diabetes due to hormonal changes that may lead to increased risk of hyperglycaemia. Executive function deficits are seen in adolescents with diabetes, regardless of the age of onset. Those who developed diabetes during later childhood and adolescence also showed poorer scores on tests of vocabulary and general knowledge.

## IMPACT ON FUNCTIONING AT SCHOOL

Although boys and girls with diabetes have been reported to achieve IQ scores in the average to high average ranges the group mean was still three to seven points lower than the control group. These mild difficulties may have a cumulative effect and in particular may create subtle difficulties for specific groups of children.

It is unclear whether the impact on intelligence, memory and other cognitive functions is reflected in everyday cognitive, social or academic functioning. Mild hypoglycaemic episodes have an influence on attention, psychomotor speed and memory. Teachers may not be aware if a child is experiencing hypoglycaemic attention difficulties and fail to provide appropriate support.

There is evidence of poorer school achievement among children with diabetes, especially in reading and spelling. Children with diabetes, and especially those who have experienced severe hypoglycaemia, have more learning difficulties reported by parents and need more part time special education than unaffected children. Up to one third of boys with diabetes are reported by their parents to have had learning difficulties at some point in their school career. Seventeen per cent received a formal diagnosis of learning difficulty or hyperactivity and twenty nine percent had resource room instruction at some point. Forty per cent of the boys with diabetes had either had special input, repeated a school year, or both. Four per cent of girls had repeated a year and 12 per cent had special intervention. The number of girls receiving special instruction was double that of those without diabetes.

There may be both direct and indirect effects on day-to-day functioning that become apparent over time. It is essential therefore to monitor and detect change with an individual child over time. It is also important to make sure that while there may be progress over time, that this is sufficient and adequate progress for the individual.

## SUMMARY

The majority of children and young people with diabetes fail to achieve adequate sugar control. As a result their developing brains are vulnerable to neurological insult through hypoglycaemia, hyperglycaemia and ketoacidosis (DKA). Health care teams, teachers, parents and young people should be aware of the potential effect on the brain associated with hypoglycaemic seizures and chronic hyperglycaemia. Early detection of minor difficulties should be a priority with assessment of cognitive skills as essential to the day-to-day management of diabetes as teaching carbohydrate counting and insulin dose adjustment.

It is important to monitor children with diabetes to ensure that subtle learning difficulties identified do not take a cumulative educational or psychological toll.



# Legislation

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## The Children and Families Act 2014

Section 100 of the Children and Families Act 2014 introduced a legal duty on schools to look after children with medical conditions. This includes children with diabetes. Schools must make arrangements to support pupils at school with medical conditions and have regard to the statutory guidance.

## The Education Act 2002

Sections 21 and 175 detail how governing bodies of maintained schools must promote the wellbeing of pupils and take a view to the safeguarding of children at the school.

## Section 3 of the Children Act 1989

This places a duty on a person with the care of a child to do all that is reasonable in the circumstances for the purposes of safeguarding and promoting the child's wellbeing. With relation to a child with diabetes, this will mean knowing what to do in the event of an emergency.

## Legal duties on local authorities

Local authorities have legal responsibilities to help make sure schools can meet the duties relating to children with diabetes. These duties both refer to all children in the local authority and they do not depend on the kind of school the child attends.

## Section 10 of the Children Act 2004

This is a particularly important piece of legislation if schools are struggling to get the support and training they need to look after a child with diabetes properly.

Section 10 essentially means the local authority must make arrangements to promote cooperation between the authority and relevant partners. Relevant partners include the governing body of a maintained school, the proprietor of an academy, clinical commissioning groups (CCGs) and NHS England. They must make arrangements with a view to improving the wellbeing of children, including their physical and mental health, protection from harm and neglect, and education.

## Section of 17 of the Children's Act

This gives local authorities a general duty to safeguard and promote the welfare of children in need in their area. If a school is looking after a child with diabetes so poorly that the child is put in danger, the local authority must step in.

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## Legal duties on the NHS

### Section 3 of the NHS Act 2006

This gives clinical commissioning groups (CCGs) a duty to arrange for the provision of health services to the extent the CCG considers it necessary to meet the reasonable needs of the persons for whom it is responsible. What this means is that CCGs should provide the healthcare the people in its area need, if these needs are reasonable.

This section also provides for CCGs to arrange such services as it considers appropriate to secure improvements in physical and mental health of, and in the prevention, diagnosis and treatment of illness, in the persons for whom it is responsible.

In relation to children with diabetes, this means that a CCG should, within reason, make sure support and healthcare is in place to improve their health or at least keep them healthy. Poor management of diabetes at school will obviously affect the health of a child. If a school is unable to get the support it needs to help manage a child's diabetes successfully then both the local authority and the local CCG have a responsibility to the child's health and welfare.

### Equality Act (2010)

The equality act says that types of discrimination are illegal, defining discrimination as when a person with a disability is treated less favourably, because of his or her disability, than a person who does not have a disability. The Equality Act 2010 defines a disability as a 'physical or mental impairment' that has 'a substantial and long-term adverse effect' on an individual's ability to carry out 'normal day-to-day activities'. A substantial adverse effect is a negative effect that is more than trivial, and the effect is long-term if it has lasted or is expected to last for more than twelve months. Whilst only a court or tribunal can decide whether a person with diabetes is covered by the definition, in many cases diabetes is covered by the definition in the Act.

Education and early years providers have a duty to make reasonable adjustment for people with disabilities and failure to make reasonable adjustments is a form of discrimination. The Act covers all schools and providers of early years settings that are covered by the early years framework in England, including maintained (non-fee paying) and fee-paying schools.

# Checklist

		Yes	No	Requires action by whom/when
1.	Has the school got a medical conditions policy? A template can be accessed from Diabetes UK:  <a href="https://www.diabetes.org.uk/Documents/Guide%20to%20diabetes/Schools-campaign/make-grade-medical-conditions-policy-sample-0614.pdf">https://www.diabetes.org.uk/Documents/Guide%20to%20diabetes/Schools-campaign/make-grade-medical-conditions-policy-sample-0614.pdf</a>			
2.	Has the Individual Healthcare Plan been agreed by the parents, school and diabetes team?			
3.	Does a risk assessment need to be completed e.g. disposal of sharps?			
4.	Are there two nominated individuals to support with care required?			
5.	Have the nominated individuals accessed training to enable them to support the young person appropriately?			
6.	Is there a system to cascade important information to all relevant staff members? Have they had awareness training?			
7.	Are there any staffing implications?			
8.	Have learning needs been reviewed?			
9.	Have the parents/carers provided emergency supplies to be available on site?			

# Glossary

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<b>Term</b>	<b>Description</b>
Basal	The role of basal insulin, also known as background insulin, is to keep blood glucose levels at consistent levels during periods of fasting.
Bolus	A bolus dose is insulin that is specifically taken at meal times to keep blood glucose levels under control following a meal. Bolus insulin needs to act quickly and so short acting insulin or rapid acting insulin will be used.
Carbohydrate	Carbohydrates are found in a wide array of both healthy and unhealthy foods—bread, beans, milk, popcorn, potatoes, cookies, spaghetti, soft drinks. The healthiest sources of carbohydrates – unprocessed or minimally processed whole grains, vegetables, fruits.
CSII	Continuous subcutaneous insulin infusion (CSII) or Insulin pump therapy involves wearing a device (insulin pump) which provides a steady stream of insulin into your body.
CYP	Children and young people
Diabetic ketoacidosis (DKA)	a serious condition that can lead to diabetic coma (passing out for a long time) or even death. When your cells don't get the glucose they need for energy, your body begins to burn fat for energy, which produces ketones.
EHCP	Education and health care plan
Glycaemia	The presence of glucose in blood.
Hypoglycaemia	Low blood sugar levels.
Hyperglycaemia	High blood sugar levels.
HbA1c	HbA1c is an important average measure of how well a person's diabetes is being controlled over the previous two to three months.
IHP	Individual health plan
Insulin	Insulin is a hormone made by the pancreas that allows the body to use sugar (glucose) from carbohydrates in the food in diabetes this may need to be given by injection.

*Glossary continues...*

# Glossary

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<b>Term</b>	<b>Description</b>
Type 1 diabetes	People with type 1 diabetes cannot make insulin because the beta cells in their pancreas are damaged or destroyed. Therefore, these people will need insulin injections to allow their body to process glucose and avoid complications from hyperglycemia.
Type 2 diabetes	People with type 2 diabetes do not respond well or are resistant to insulin. They may need insulin injections to help them process sugar and to prevent long-term complications from this disease. Persons with Type 2 diabetes may first be treated with oral medications, along with diet and exercise.
Lancets	A blood lancet is a pricking needle used to obtain drops of blood often used within a device.
Nephropathy	Diabetic nephropathy (or diabetic kidney disease) is a progressive kidney disease caused by damage to the capillaries in the kidneys.
Neuropathy	Diabetes can cause neuropathy as a result of high blood glucose levels damaging the small blood vessels which supply the nerves.
PDSN	Paediatric diabetes specialist nurse
Retinopathy	Also known as diabetic eye disease, is when damage occurs to the retina due to diabetes. It can eventually lead to blindness.
Sharps	Any object that could readily puncture or cut the skin of an individual when encountered.

# References

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## Guidance

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- uclh.nhs.uk Living with diabetes: Sample care plan; 2015. Available from: <https://www.uclh.nhs.uk/OurServices/ServiceA-Z/CYPS/PDIAB/Pages/Takingcontroldiabetes.aspx>

## Further information available from Diabetes UK: [www.diabetes.org.uk](http://www.diabetes.org.uk)

- Children with diabetes at school: <https://www.diabetes.org.uk/schools>
- Treating diabetes – information for school staff: [www.diabetes.org.uk/guide-to-diabetes/schools/school-staff/treating-diabetes](http://www.diabetes.org.uk/guide-to-diabetes/schools/school-staff/treating-diabetes)
- Diabetes in schools – the IHP – a child’s individual healthcare plan: <https://www.diabetes.org.uk/Guide-to-diabetes/Schools/IHP-a-childs-individual-healthcare-plan/>
- Diabetes in schools – responsibilities of headteachers, school governors & responsible bodies: <https://www.diabetes.org.uk/Guide-to-diabetes/Schools/School-staff/Responsibilities-headteachers-school-governors-responsible-bodies/>
- Sample medical conditions policy: <https://www.diabetes.org.uk/Documents/Guide%20to%20diabetes/Schools-campaign/make-grade-medical-conditions-policy-sample-0614.pdf>
- Diabetes in schools – responsibilities of trained staff: <https://www.diabetes.org.uk/guide-to-diabetes/schools/school-staff/responsibilities-trained-staff/>
- Diabetes in schools – information for parents: <https://www.diabetes.org.uk/guide-to-diabetes/schools/parents>
- Diabetes in schools – information for children: <https://www.diabetes.org.uk/guide-to-diabetes/schools/children>
- Care in schools helpline: <https://www.diabetes.org.uk/Guide-to-diabetes/Schools/Care-in-School-Helpline>

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The diabetes nursing team are happy to be contacted to discuss any questions or concerns.

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Healthy London Partnership is a collaboration between London's 32 clinical commissioning groups and NHS England London region to support the delivery of better health in London

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