Supporting Children with Type 1 Diabetes in Primary Schools and Early Years Settings

Dr Julie Edge, Consultant in Paediatric Diabetes
Elaine O’Hickey, Diabetes Specialist Nurse
Jane Haest, Diabetes Specialist Nurse
Sarah Breton, Commissioner for Children, Oxfordshire CCG
Janet Johnson, Vulnerable Learners Strategic Lead, Children, Education and Families Directorate

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1. Basic Diabetes Knowledge

1.1 What is Diabetes?
Type 1 diabetes is a condition resulting from destruction of the insulin-producing cells of the pancreas in children and young adults. Insulin is a hormone which helps the body to use glucose contained in foods. Without insulin, the glucose from the food cannot be used and the level will rise in the bloodstream. This causes tiredness, weight loss, excessive thirst and frequency of passing urine. Around 360 children in Oxfordshire have Type 1 diabetes and this is increasing all the time.

1.2 How is it managed?
Although diabetes cannot be cured, it can be treated effectively. The aim of treatment is to keep the blood glucose levels close to normal range (4-7 mmol/l). This involves:
- Usually at least 4 injections of insulin a day or the use of an insulin pump.
- Regular meals containing carbohydrate and possibly snacks in between.
- Finger prick blood checks before each meal and at any other time when necessary.

Good blood glucose control will reduce the risk of later complications. When a child is treated and cared for in a supportive environment, they should feel well and will be full of energy again. This will enable them to concentrate in school and, therefore, achieve their educational potential.

*High or low blood glucose levels will affect learning (see appendix 1 for more details).*

2. Care required within schools and early years setting
Schools are not required to do anything over and above care that is generally provided in the home. Support will always be provided by parents and by the Oxfordshire Children's Diabetes Team.

Problems can occur if blood glucose levels are not kept within target levels and it is therefore essential that all school staff have an awareness of this medical condition and the child's needs during the school day. In addition, 2-4 volunteers (who may have this in their job description) will be trained in the specifics of the care, including blood glucose checking and giving insulin.

2.1 Blood glucose checking
Regular finger-prick blood glucose checking is essential to monitor the effectiveness of diabetes management. If blood glucose (BG) levels are too high or low this can cause short-term and long-term problems including affecting eyes and kidneys.

Children and young people generally have their blood glucose levels checked before a morning snack, before lunch, before and after sport and sometimes before leaving school to go home. This is done using a finger prick device (with a self contained drum of lancets). These devices are intended for self monitoring on an individual person only. The results need to be acted upon if outside the target range (either less than 4mmols/l or greater than 14 mmols/l). Details for the individual can be found in the child's Care Plan.

A blood glucose level below 4 mmol/l is too low - this is also called HYPOGLYCAEMIA. A blood glucose level above 14 mmol/l is too high.

Some young people using insulin pump therapy also use continuous glucose monitoring. These devices will show current glucose levels and will alarm when glucose levels are outside of range. More training will be provided on the use of these devices.
2.2 Administration of insulin (using either a pen or pump)
Insulin is given as either ‘basal’ insulin or ‘bolus’ insulin. The basal insulin is either a long acting insulin injected in the morning or evening at home, or basal insulin delivered continuously by an insulin pump. Details for the individual can be found in the child’s Care Plan.

Bolus insulin is a dose of quick-acting insulin given when a child or young person eats. It needs to be given whenever a child is having a meal or snack and whenever the blood glucose level goes higher than the target range. This insulin is given either using a pen device or an insulin pump (details for the individual can be found in the child’s Care Plan).

2.3 Insulin dose calculation
Children and young people need to balance their bolus insulin with the food that they are eating, and the current blood glucose level. The calculations will be done by parents and the school informed of the dose to be given via the COMMUNICATION BOOK or the dose chart which is used by all parents in Oxfordshire. Insulin needs to be given with all food, snacks and carbohydrate containing drinks unless the food or drink is given as treatment for a low blood glucose level (hypoglycaemia, see section 2.8) or is used to prevent hypoglycaemia when undertaking exercise. Details for the individual can be found in the child’s Care Plan.

Insulin doses are best given before meals, but younger children who do not always finish their lunch can have their insulin after their meal. This will be detailed in the child’s Care Plan.

2.4 Carbohydrate counting
The carbohydrate in foods raises the blood glucose level quickly. Therefore, any carbohydrate eaten or drunk needs to be matched with insulin and this is done by ‘carbohydrate counting’. This is NOT something that needs to be done by the school staff, but will be done by the parents and the information provided to the school in the COMMUNICATION BOOK or dose chart. Children with diabetes can have either packed lunches or school meals. The parents will calculate the amount of carbohydrate in packed lunches and they are also expected to contact the staff providing the school meals to discuss the carbohydrate content of the school meals. They can have the help of the Diabetes Team Dietitians with this. Younger children will need supervision at lunchtimes to check how much of their meal they have eaten.

2.5 Activity and exercise within the school environment
It is important that children with diabetes participate in physical activity, for their long-term health. Activity may affect blood glucose levels, depending on the intensity, duration and how close the activity is to insulin dosages. Details of how to manage the blood glucose checking, food and insulin doses will be given in the child’s Care Plan.

2.6 Awareness of the impact of stresses within the school environment
It is well recognised that stress (including anxiety about possible bullying and stress related to tests/exams) can affect blood glucose levels. This fluctuation may be outside a young person’s ability to control and therefore needs to be taken into consideration when assessing performance.

2.7 Effects of high and low BG levels on school work
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 an 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 rapid responding.

2.8 Management of hypoglycaemia (low blood glucose levels)
Hypoglycaemia (BG less than 4 mmol/l) can cause a lot of different symptoms; “stress” symptoms such as trembling, fast heart rate, pallor, sweaty, and/or effects on the brain function such as difficulty concentrating, blurred vision, difficulty hearing, slurred speech, poor judgement, problems
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with short term memory. A blood check will need to be done and the child treated with glucose according to the Care Plan. Children should not be left to do this themselves and should not be left alone until they have recovered. They should be allowed to check and treat where they are in the classroom.

If the BG level drops very low, the child may not be quite “with-it”, and may be semiconscious or unconscious, or may even have a convulsion (fit/seizure). Urgent treatment is required but it is unsafe to give any treatment by mouth. In this instance the school setting should put the child in the recovery position and ring 999 and then contact the parents. Further details are in the Care Plan.

3. When a child develops Diabetes or moves into the School

3.1 Parents’ initial contact
The child’s parents will inform the school about the child having diabetes as soon as possible, so that arrangements can be put in place. Parents may wish to arrange an introductory meeting with their chosen school's head teacher before their child enrols or when the child first develops diabetes.

3.2 Basic requirements of the School
All children with diabetes regardless of their age need help and support with their diabetes in school, from all the teachers and support staff who come into contact with the child. All staff will also need to understand how to recognise and treat a low blood glucose level. Details of the support needed are detailed in the Best Practice document.

3.3 Training of Nominated School staff in specific support
Particular help is required at meal times and other blood checking times from volunteers who will be specifically trained for the following tasks.

Depending upon the child’s age this will involve either:-
1. Supervision of blood glucose checking and recording of results
2. Supervision of insulin injections or supervising a dose using an insulin pump;

OR
1. Perform and record blood glucose checks;
2. Administer lunchtime insulin injection or administer a dose using an insulin pump

All volunteers will be fully trained in either supervision of tasks or performing blood glucose checking and insulin injections by the Diabetes Specialist Nurse and it is only when the parent, Specialist Nurse and the volunteer are happy that they are able to perform these tasks on their own, that this will be requested of them. Annual updates of training will be offered to all volunteers by the Diabetes Specialist Nursing team. This will be done as a half-day seminar, with choice of dates. There will be support available at all times. This may be in the job description of certain staff members.

3.4 Care Plan
Together the parents and Diabetes Specialist Nurse will complete a Care Plan that sets out what support a child will need in school. This should include:

- Details of the prescribed insulin, including the dose to be given, the procedure for injecting via a pen device or an insulin pump.
- Details of who will help the child with medication and blood glucose checking and where these tasks can be undertaken safely, ensuring the dignity of the child/young person is maintained.
• Descriptions of the child’s symptoms of low and high blood glucose levels 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.
• A description of the training that will be given to relevant members of staff.
• Details of 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.
• The things that should be done before, during, and after PE lessons. This might include blood glucose checking, a snack or correction bolus if necessary and disconnecting a pump (if using one).
• Details of where any medication will be stored and who will have access to it.
• Records of the training that has been given to the volunteers from the Diabetes Specialist Staff.

Templates for the child’s Care Plan will be provided to the parents by the Diabetes Specialist Nurse. Once people involved in drawing up this plan are happy, the plan should be signed by the school, the parents and a member of the child’s diabetes team. This should then be circulated to all relevant members of staff. This should be updated on an annual basis by the parent and agreed by the Diabetes Team and the school.

3.5 School Transport
If transport to and from school is organised by the school or local authority, the school will be expected to inform the driver that the child has diabetes, and to follow existing agreements for health issues.

4  Legal Considerations

4.1 Equality Act (2010)
The Equality Act (2010) 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 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 in England, including maintained (non-fee paying) and fee-paying schools.

Example: A disabled pupil at an infant school has diabetes and requires daily support with carrying out blood glucose checks and insulin injections. He is not classified as having SEN and therefore receives no support through the SEN framework. He is, however, disabled and therefore if the lack of daily support places him at a substantial disadvantage the school is under a duty to make the adjustment of providing the support, if it would be reasonable to do so.


Further information can be found in Diabetes UK (2011) Education and diabetes: Your rights in early year’s settings, schools, and further and higher education

4.2 Indemnity and risk
A Risk Assessment has been carried out at the Oxford University Hospitals NHS Foundation Trust and a copy of this is available to school/setting employees through the Paediatric Diabetes
Specialist Nurses. In addition there is a needle-stick policy in the unlikely event of procedures not being followed and a needle injury occurring to a member of staff.

Schools/settings will ensure that their insurance company will indemnify their employees against claims for alleged negligence providing they are acting within the scope of their employment. For maintained schools this will be Oxfordshire County Council. For the purposes of indemnity, the administration of medicines falls within this definition and hence employees can be reassured about the protection their employer provides. In practice the indemnity would cover trained employees for any consequence arising from either a failure to administer the treatment or the administration of the treatment itself.

This guideline covers all activities carried out by the school/setting, including residential trips.

5. Responsibilities of those helping children with their medical needs in school

5.1 Governors and Head of School or Early Years setting
Following new legislation, we recommend that the Governors and Head of School or Early Years setting will be responsible for:

- Ensuring that all school/setting employees are aware of a child having diabetes, are able to access the child’s Care Plan in the school setting and know how to assist them when necessary in a diabetes emergency (especially hypoglycaemia).
- Ensuring that appropriate health and safety risk assessments have been carried out.
- Identifying a minimum of two, and maximum of four, named volunteers from the establishment who will be trained in the management of each individual child/young person’s diabetes. Establishing the safe storage of diabetes containers (containing, if necessary, insulin injection devices as well as hypoglycaemic treatment), and disposal of used “sharps”.
- Ensuring that the establishment and its employees do not discriminate against young people with diabetes, thereby enabling young people with diabetes to participate fully in all aspects of school/setting life, including physical and extra-curricular activities.

5.2 Oxfordshire Children’s Diabetes team
The diabetes nursing team will offer training to the volunteers from the school setting, to include (as required by the child’s Care Plan)

- training on the individual child’s Care Plan
- teaching of supervision or performing of blood/ketone checks
- 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

In addition, annual update training will be provided through the year. Volunteers from each school will be invited to attend a 3 hour workshop at the Oxford Children’s Hospital or another more convenient venue. This will include an overview of diabetes; the 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.

Training will also be offered to all staff in recognition and management of hypoglycaemia at annual updates.
5.3 Volunteer
In this context the term “volunteer” refers to a school/setting or Local Authority employee who is willing to actively support a young person with diabetes and has been selected and appointed to undertake such duties. They may have these duties written into their job description.

The volunteer will be responsible for:
- either carrying out or supervising blood glucose/ketone checking just before a meal or snack according to the training received.
- either carrying out or supervising insulin dose calculation with a meal according to the training received.
- carrying out or supervising the meal-time insulin via pen or insulin pump according to the training received.
- treating any hypoglycaemic episodes

Where volunteers are being trained, they will be allowed as much time as they wish watching a parent carrying out the tasks, before taking over themselves. The Diabetes Team would recommend a period of 2 weeks, with the volunteer observing the parent for one week and then the parent observing the volunteer for a further week.

5.4 Parent/Carer
A parent or carer who has legal responsibility for the young person who has diabetes will liaise with the Head of School/establishment and the Paediatric Diabetes Specialist Nurse 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 –
- All materials and equipment necessary for diabetes care tasks, including blood glucose/ketone checking and insulin administration (if needed). The parent/carer is responsible for the maintenance of the blood glucose/ketone checking equipment (i.e. cleaning and performing controlled testing per the manufacturer’s instructions) and must provide equipment necessary to ensure proper disposal of materials (sharps boxes).
- Supplies to treat hypoglycaemia, including a source of glucose and a supply of Glucogel.
- Information about the student’s meal/snack schedule. The parent should work with the school/setting to coordinate this schedule with that of the other children/young people as closely as possible. For young children, instructions should be given for when food is provided during school/setting parties and other activities.
- 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.
- Calculating carbohydrate content of school meals and snacks

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

5.5 Child/Young Person
Children and young people should be allowed to manage their own diabetes at school/setting with parental consent, to the extent that is appropriate for the student’s developmental stage and his or her experience with diabetes. The extent of the student’s ability to participate in diabetes care should be risk assessed and agreed upon by the school/setting personnel, the parent/carer, and the Paediatric Diabetes Specialist Nurse. The ages at which children/young people are able to perform self-care tasks are very individual and variable, and a child/young person’s capabilities and willingness to provide self-care should be acknowledged in the child’s Care Plan.

During the second term of Year 6 the child should be allowed to undertake their diabetes care without supervision, provided this has been agreed by parents, diabetes nurse specialist and school. This will be documented in the child/young person’s Care Plan.
We are very grateful for the help and support of the school/setting in looking after this child with diabetes. We know that children with good support are more likely to feel safer at school, have better long term wellbeing and will achieve their optimal psychological and academic performance.
### Guidance on care generally required at different stages

Individual children may vary from this, particularly if they have other complex needs.

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<tr>
<th>Involvement of the young person</th>
<th>Care required</th>
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| **Children aged 5 years and under** | **A child will need:**  
An adult to administer insulin (via a pen or pump)  
An adult to monitor, record and act on blood glucose readings  
Additional observation and/or intermittent problem solving interventions when the signs and symptoms of diabetes ensue  
Adult supervision to assess for signs and symptoms of hypo and hyperglycaemia  
Supervision at meal or snack times to assess how much carbohydrate consumed  
Staff should be trained in interventions required if a young person is hypoglycaemic |
| The preschool child is unable to perform any diabetes tasks. They will need a named adult to undertake these tasks in the absence of their parents. | |
| **Primary school Aged 6 years and up** | **A child will need:**  
An adult to administer insulin (via a pen or pump)  
An adult to monitor, record and act on blood glucose readings  
Supervision at meal or snack times to assess how much carbohydrate consumed  
Adult supervision if the child is hypo and hyperglycaemic unaware  
Staff should be trained in interventions required if a young person is hypoglycaemic |
| 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. They should be expected to cooperate with staff in ensuring that diabetes tasks are performed within school (unless hypoglycaemic). | |
| **Year 6** | **A child will need:**  
Supervision of insulin administrations (via a pen or pump)  
Agree blood glucose readings  
Staff should be trained in interventions required if a young person is hypoglycaemic  
Supervision of blood glucose testing in class and confirmation of readings. Appropriate supervision during physical activity and extracurricular activities |
| In this year of transition, it should be recognised that the child may require adult support to manage their diabetes, whilst learning the necessary knowledge and skills to become more independent | |
6 Diabetes and learning

There is ample evidence that poorly controlled diabetes can affect learning and this can be in specific areas. Acute hypoglycaemia at any time will stop a young person concentrating for up to 2 hours, and must be taken into account in the classroom. Long-term poor control can affect learning and this list has been produced to show teachers what support may be offered for these specific problems.

6.1 Children with diabetes do worse than their peers in demanding classroom environments

Cognitive function is related to the amount of exposure to hypoglycaemic and hyperglycaemic events during development. Cumulative and chronic exposure to the metabolic abnormalities resulting from diabetes is a major risk factor related to poorer learning over time.

6.2 Being diagnosed with diabetes when young and long-term severe hypoglycaemia increases the risk of poorer learning and memory.

Children are more sensitive to glucose changes in the early years of life because of rapid brain development. Episodes of severe hypoglycaemia were associated with lower IQ. Early exposure to hypoglycaemia can:

⇒ Affect areas in the brain responsible for language, memory and attention.
⇒ Reduce spatial intelligence and delayed recall
⇒ Reduce short-term verbal memory, phonological processing skills, attention and executive processing.

6.3 Seizures caused by hypoglycaemia can also affect memory

In pre school children the areas most affected by hypoglycaemia are those concerned with motor, sensory and visuo-spatial function. In 7 to 12 year old children the areas most affected are related to memory function. Being diagnosed with diabetes at a later age affects visual learning and memory, visual motor integration and psychomotor speed.

6.4 Long term hyperglycaemia may affect cognitive function later in life causing poorer neuro-cognitive outcomes and lower verbal intelligence.

During adolescence the brain areas responsible for planning, organisation and independent thinking are most vulnerable to the effects of hyperglycaemia. Long term hyperglycaemia can affect memory and executive function, fine motor control tasks, verbal intelligence and attention.

6.5 Children with diabetes perform worse in reading and spelling

Even small reductions in attention, visuospatial ability and motor speed can result in poorer reading and writing skills.

6.6 Differences between boys and girls

Boys with diabetes show more deficits than girls with lower overall learning particularly in memory and attention and vocabulary tasks.

6.7 Poor memory impacts on the ability to follow aspects of the diabetes regimen

Memory is a critical component in learning. Early identification of working memory difficulties and minor cognitive decline is essential to self-care skills. Carbohydrate counting and remembering blood testing are both parts of the diabetes regimen that have high memory demands. Adolescents are a highly vulnerable group in relation to disruption of organisation and memory. Compensatory strategies and environmental support can both help offset decline in cognitive abilities and support self care skills.

6.8 Teacher reports are essential to understanding links between assessment results and day-to-day care

Health care professionals, parents and teachers can all monitor children to ensure subtle learning difficulties are identified and do not take a cumulative educational or psychological toll.
<table>
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<tr>
<th>Potential Issues</th>
<th>Impact in the classroom</th>
<th>Strategies and support</th>
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| Processing speed | Slower processing speed results in difficulties in understanding and keeping up with new tasks set.                                                                                                                                                                                                                                                     | - Homework taking longer  
- Slower note taking  
- Not showing all knowledge when timed  
- Frustration – tendency to take short cuts.                                                                                                                                                                                                                                                                                                | - Reduce homework & provide handouts  
- Ensure enough time to note tasks  
- If necessary, request extra time allowance for state exams.   
- Reward quality of work not just quantity  
- Encourage typing                                                                                                                                                                                                                                                                                                                      |
| Attention       | - Dividing attention (reading and writing)  
- Selective and sustaining attention – avoiding distraction                                                                                                                                                                                                                                                                                           | - One task at one time  
- Short instructions & break down tasks  
- Limit distractions  
- Sit child at front with a studious buddy  
- One to one teaching or small group work  
- Vary tasks and teaching style  
- Movement breaks  
- Use their name often, praise while still paying attention.                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                      |
| Memory          | - Holding short term information  
- Learning and remembering new information, homework tasks or discussions  
- Following a film or a story  
- Poor generalisation of information from one setting to another  
- Elements of new sequenced tasks                                                                                                                                                                                                                                                                                                                                 | - Use calculators for maths  
- Encourage showing working out.  
- Repeat instructions and check they have been understood  
- Small amounts of new information at a time  
- Support error-free learning  
- Use diaries, checklists, phone.  
- Lesson plan & discuss lessons afterwards  
- Repetition and rehearsal  
- Connect new information and things they already know  
- Use visual prompts for sequenced tasks                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                      |
| Executive Function | - Planning  
- Organising  
- Self-monitoring  
- Initiating tasks  
- Problem solving                                                                                                                                                                                                                                                                                                                                 | - Provide structure and prompts and gradually fade them out over time  
- Mind maps to help revision and plan essays  
- Practise use of wall calendars with planning for deadlines  
- Work on using mobile phone for reminders  
- Model and reward checking of work  
- Clear expectations and feedback  
- Realistic goals  
- Model step by step approach to problem solving using real life situations                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                      |
| Perceptual Skills | - Spatial awareness  
- Transferring 2D information to 3D  
- Locating information on a busy work sheet  
- Visual scanning  
- Copying from the board  
- Shape, number, letter recognition  
- Motor planning                                                                                                                                                                                                                                                                                                                                 | - Worksheets without too much information  
- Use of highlighter to aid scanning for main ideas  
- Handouts  
- Multi-sensory learning  
- Consistent and routine approach  
- Verbal prompts progressing to written prompts and fade them out  
- Lay things out in the sequence they will be needed                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                      |