



diabetes

**in education and
children's services**

Planning and support guide for education
and children's services

2008



Government
of South Australia

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Further information

In South Australia, families and health professionals can seek further information about health support planning from the manager of the service in which the child or student is enrolled or planning to enrol.

Department of Education and Children's Services (DECS) district personnel can assist worksites to plan support for children and students with additional needs. These services can be contacted through district offices (see www.decs.sa.gov.au). General enquiries can be directed through DECS toll free telephone number on 1800 088 158.

General information about diabetes management and associated specialist services is available from:

- Women's and Children's Hospital (WCH) Endocrinology and Diabetes Centre, telephone (08) 8161 6402
- Royal District Nursing Service (RDNS) diabetes nurse educators, telephone 1300 364 264
- Diabetes SA (DSA) telephone (08) 8234 1977.

Copies of this book and related material, training programs and services can be accessed at www.chess.sa.edu.au. This site gives detailed information about the South Australian *child health and education support services (chess)*.

This icon indicates that the information can be accessed from the chess website:

www.chess.sa.edu.au



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Disclaimer

The health-related information in this book is accurate at the time of going to print. Readers are encouraged to check with their doctor or local health service provider for more recent information.

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1 Diabetes in childhood and adolescence

1.1 Type 1 diabetes

Type 1 diabetes (previously known as insulin-dependent or juvenile diabetes) is the most common form of diabetes in childhood and adolescence. Most secondary schools will have approximately one student with diabetes for each 500 students, whilst primary schools will have one per 1200.

Type 1 diabetes is an auto-immune disease in which the body's own immune system attacks the insulin-making cells in the pancreas and destroys them over time. The cause of type 1 diabetes is not fully understood, but it is NOT due to lifestyle factors, such as poor diet or being overweight. There is no risk of contracting diabetes from affected individuals.

Type 1 diabetes results in a severe deficiency of insulin. Insulin is the hormone which controls blood glucose levels (BGLs). A deficiency of insulin results in high blood glucose levels and these high levels cause the early signs and symptoms of diabetes: excessive thirst, increased urination, weight loss and lethargy. Without insulin treatment the disease progresses to a life-threatening condition marked by dehydration, high blood glucose levels and a build up of acids (ketones) in the blood to toxic levels (ketoacidosis).

Type 1 diabetes requires lifelong treatment with insulin, via injections, pen or pump, blood glucose monitoring and careful attention to food and exercise.

1.2 Type 2 diabetes

Type 2 diabetes (previously known as adult-onset or non insulin-dependent diabetes) is the most common form of diabetes in Australia and the incidence is increasing. Type 2 diabetes occurs mainly in adults, usually over 40 years of age, although it is now being seen more often in adolescents (particularly those who have a family history of type 2 diabetes). The development of type 2 diabetes may be accelerated by lifestyle

factors (obesity and inactivity) and the treatment usually involves weight control, exercise, tablets and occasionally insulin injections.

Type 2 diabetes is very different from type 1 diabetes. Type 2 diabetes is due to the pancreas not producing enough insulin (insulin deficiency) or the insulin produced is unable to work effectively (insulin resistance).

1.3 Diabetes in education and children's services

Children and students with well managed diabetes are no more likely to be sick than other young people and can generally be expected to do everything their peers do. However, children and students with diabetes do need:

- emergency treatment, supervision and support in the event of a low blood glucose level
- unrestricted access to emergency treatment for low blood glucose levels
- to eat meals and snacks on time
- to eat snacks at additional times if involved in vigorous physical activity for more than 30 minutes
- unrestricted toilet privileges and access to drinking water
- additional planning with parents to accommodate changes in school routines, eg excursions, camps and other activities
- extra supervision if unwell
- support, encouragement and privacy when monitoring blood glucose levels and injecting insulin at preschool/school.

Preschool/school attendance should be largely unaffected, apart from routine doctor or clinic visits every 3 months. Clinic visits are very important but can be negotiated to ensure children and students with diabetes do not miss out on special events. Occasionally, unstable diabetes will lead to hospital admission or more frequent visits to the doctor or clinic for a period of time. It is uncommon for diabetes to be the cause of significant absenteeism.

This support guide details strategies for communication with families and supporting health services. Education and children's services workers should record absences in any communication to health professionals because significant absences may indicate the need for a diabetes management review.

1.4 Living with diabetes

The initial diagnosis of type 1 diabetes always has a significant impact on the family. They need time and support to adjust to the diagnosis and its management, and to grieve the loss of their fully healthy child.

Diabetes management is lifelong, continuous, painful and frequently frustrating for the individual and their family. The demands of diabetes are relentless and can cause considerable stress on all involved.

The management of diabetes is a balancing act. The child or student and their family attempt to balance insulin (given as 2–4 injections per day or via a pump), carbohydrate food and activity to keep their blood glucose levels as close as possible to the normal range. High blood glucose levels over many years increase the risk of long term complications of diabetes (blindness, kidney failure, nerve damage). Low blood glucose levels can result in unconsciousness or seizures. These ever present risks are often the cause of great anxiety for families. The family needs those who care for their child to understand the complexity and responsibilities of diabetes management.

Children and students often worry about or even avoid managing their diabetes at school, because they don't want to appear different from their peers. It is therefore important to establish a culture of inclusion and support for children and students with diabetes, so that they participate fully and safely.

Parents and guardians must be able to discuss all aspects of routine and emergency care with the educator and others involved. Regular communication will ensure that all involved have a shared understanding of the [diabetes care plan](#) and education and children's services [health support plan](#).

Adjustment to diabetes for children and their families is an ongoing psychological process. Education and children's services workers can be supportive and mindful of the chronic nature of this condition and the nature of treatment which is continuous and demanding.

2 Type 1 diabetes: Management

The management of type 1 diabetes is a balance between factors which lower blood glucose (insulin and exercise) and factors which raise blood glucose (mainly food and illness).

Maintaining this balance is very important, but often difficult to achieve. The routine management of diabetes at preschool/school, as well as the management of diabetes emergencies, should be specified in the individual diabetes care plan.

2.1 Routine care: staff responsibilities

2.1.1 Food and fluids

The foods recommended for people with diabetes are based on the same healthy eating principles recommended for the whole population. Families are responsible for providing education and children's services with the food and drink required by their child. Ideally this should be appropriately labeled (ie morning recess, lunch, before sport etc). Food and drinks necessary for the treatment of low blood glucose levels must also be provided by the family.

Important points:

- food or drink containing the right amount of carbohydrate must be eaten at each meal and snack time to balance the insulin given
- extra food or drink must always be available:
 - to cover vigorous physical activity of more than 30 minutes duration
 - to treat a low blood glucose level
- meals and snacks should never be missed or delayed or a low blood glucose level may occur
- very young children may require extra supervision at meal and snack times
- most children and students will have a food plan that fits in with regular school routines, avoiding the need to eat regularly in class or at odd times.



The timing and content of meals and snacks, the need for supervision and the extra snacks needed to cover exercise should be detailed in the diabetes care plan and health support plan.

Management of low blood glucose levels (hypoglycaemia or 'hypo') involves giving glucose-containing products such as glucose tablets, glucose lollies or a 'fruit box' style



drink which increase the blood glucose rapidly, followed by a slowly absorbed carbohydrate, in the recommended quantities below (see also [First Aid flow charts](#) for emergency management of low blood glucose levels).

Glucose-containing products are:

- 'fruit box' style drink (125ml)
- glucose lollies or jellybeans (5–6)
- glucose tablets (2–3)
- glucose gel
- normal lemonade/soft drink (125ml).

Slowly absorbed carbohydrates are:

- muesli bar (1)
- plain sweet or savoury biscuits (2–3)
- milk (1 cup)
- fruit (1 piece).

The diabetes care plan will specify the preferred glucose containing products and carbohydrates for each individual. In an emergency, if the child/student's hypo kit cannot be located, alternative glucose-containing products and carbohydrate products can be offered.

If any difficulties are noted with the food plan, the family's emergency contacts should be notified or the difficulty communicated through the communication book.

2.1.2 Activity

The child/student with diabetes should be encouraged to exercise because it:

- improves fitness and well-being
- encourages a lifelong healthy lifestyle
- builds self-esteem, confidence and teamwork
- improves the action of insulin and helps with blood glucose control.

Exercise and low blood glucose levels (hypoglycaemia or 'hypo')

Exercising muscles use more glucose for energy. In people with diabetes, particularly if the exercise is prolonged or intensive, this may cause the blood glucose level to fall too low either during or after exercise. To prevent hypoglycaemia with exercise, extra carbohydrate food, less insulin or a combination of both is required. At school, hypoglycaemia is usually prevented by giving extra carbohydrate food before, during or after vigorous exercise of more than 30 minutes.

Special precautions for exercise

Education and children's services workers need to discuss a plan with families regarding the management of exercise. The agreed strategies should be written in the individual [health support plan](#) and monitored through the communication book.



The support plan should determine how staff will ensure that treatment for low blood glucose levels will be available at the place of physical activity and sport. School uniforms should have a pocket to allow the student with diabetes to carry treatment for low blood glucose levels. For young children, such as those in childcare, preschool or junior primary school, the supervising adult should carry the hypo kit. Children and students with diabetes need additional monitoring during exercise, and younger children may also need to have meals supervised, especially before exercise.

Any sport in which a low blood glucose level would pose an extra risk to the child/student (such as water sports) should be planned in collaboration with families.

Water sports need very careful planning and supervision because a low blood glucose level may increase the risk of drowning. Some features of a low blood glucose level may be masked by cooler body temperatures experienced during water-based activity. An adult should be located on the edge of the water-based activity as a safety watch. This should be documented on the [swimming and aquatics consent form](#).



Exercise and high blood glucose levels

Exercise is not recommended when the child/student with diabetes is unwell and has high blood glucose levels. Exercise can cause blood glucose levels to become even more elevated in these circumstances.

2.1.3 Monitoring blood glucose levels

Monitoring signs and symptoms

Signs are observable indicators; symptoms are what the person can feel and report.

Monitoring a child/student with diabetes for signs and symptoms of high or low blood glucose levels is very important if he or she is unable to monitor the blood glucose level using a blood glucose meter. Education and children's services workers should be trained in what signs to look for and when to take action. The family and staff need to have a system in place so that the symptoms are reported and any action taken is communicated (for example, through the communication book). Families will use the record of signs, symptoms and action taken to make changes to the child/student's diabetes management.

Blood glucose monitoring

Blood glucose levels are used to monitor whether the balance between insulin, carbohydrate food and exercise is right. Most children and students will know how to prick their finger and measure their blood glucose level using their own blood glucose meter.

Most children and students with diabetes will monitor their blood glucose levels at least once a day at school, usually before recess or lunch. Additional blood glucose monitoring may be required:

- before, during or after exercise
- if the child/student has symptoms of a low blood glucose level

- if the child/student is unwell.

The individual requirements for blood glucose monitoring should be detailed in the individual's diabetes care plan.

Education and children's services staff are generally not expected to perform blood glucose monitoring but should be trained to supervise and support the child/student.

Some children are too young to manage the blood-letting device ('finger-pricker'). These children may be supported initially by a parent or visiting nurse. Occasionally (for example in some rural and remote communities), education and children's services staff may be asked to assist short-term with this procedure. In these cases, the staff should be trained and supported by a registered nurse who remains immediately available, at least by telephone, to provide advice.

Storage of equipment

Blood glucose monitoring equipment should be stored so that it is accessible as required by the child/student and supervising adult. Typically this equipment is stored with the hypo kit (see [section 2.2 First aid and emergency care: staff responsibilities](#)). Ideally, one hypo kit should be kept in the classroom and another with the first aid officer/front office. The child/student should be encouraged to carry glucose on them for immediate access.

2.1.4 Medication

Children and students with type 1 diabetes are treated with two to four injections of insulin each day, or insulin is given via an insulin pump (see below). The dose of insulin is adjusted according to blood glucose levels, carbohydrate food to be eaten and exercise. Many children and students are now having insulin injections or being given extra insulin via their insulin pump before recess and lunch at school as a means of improving their overall diabetes control. ***It is very important that once insulin is given, the child/student eats straight away.***

Education and children's services workers are not expected to give insulin injections or extra insulin via the insulin pump but may be asked to support and supervise the administration of insulin and assist in providing privacy for the child/student.

A discussion needs to take place between the family, health professionals and staff about how often and what time the insulin injections need to be given and what tasks the young person can self-manage. The diabetes care plan and the health support plan will assist with this.

Insulin pumps

What is an insulin pump?

An insulin pump is an alternative way of delivering insulin under the skin. Insulin pumps allow more physiological insulin delivery and, if well managed, enable the child/student

to improve their diabetes control and reduce the incidence of low blood glucose levels (hypoglycaemia). Insulin pumps also allow more flexibility in the timing and content of meals and snacks and reduce the need for injections.

How does an insulin pump work?

An insulin pump is a small computerised device that is programmed to automatically deliver small amounts of background (basal) insulin continuously 24 hours a day. In addition, the pump needs to be activated to deliver an extra burst (bolus) of insulin every time carbohydrate food is eaten. An extra bolus of insulin can also be given to correct a high blood glucose level. To activate the pump to deliver a bolus of insulin, the child/student enters their blood glucose level and the amount of carbohydrate food (in grams) that they are going to eat into the pump. The pump then automatically calculates the correct amount of insulin required and the student activates the pump to deliver this amount.

The pump delivers insulin via a 'set' which is a small tube inserted under the skin. This 'set' needs to be replaced every three days at home. The pump can be disconnected for short periods (1–2 hours) during the day for showers, swimming or contact sports. In case of insulin delivery problems via the pump, insulin for injection and syringes should always be available at school.

Younger children, who cannot take on the responsibility of delivering insulin boluses without parental supervision, can have their pump programmed to automatically deliver a fixed amount of extra insulin at recess and lunch. If the pump has been programmed in this way, it is important that all the food provided for recess and lunch is eaten at the correct time to prevent a low blood glucose level.

How is management of students with diabetes different on the pump?

The management of children and students with diabetes on insulin pumps is not very different to the management of students on insulin injections. The important differences are listed below and will be detailed in the student's individual [care plan](#) and [first aid flow charts](#):



- low blood glucose levels are often easier to treat
- high blood glucose levels need to be taken more seriously as they may indicate an insulin delivery problem
- exercise management can include reducing insulin delivery via the pump or disconnecting the pump for swimming or contact sports.

The health support plan should detail safe storage of insulin and equipment and, where necessary, safe disposal of 'sharps'.

2.1.5 Changes in routine, special events and circumstances

Like all students, young people with diabetes should be encouraged to take part in special events such as parties, celebrations, camps and excursions. Changes in the child/student's routine may require changes to insulin doses or carbohydrate intake and is best planned in collaboration with families. **Planning is the key, and advance**

notice of upcoming events will help with this planning. Consideration needs to be given to the type of activity, availability and timing of food, as well as routine diabetes management.

Parties and celebrations

If possible, discuss the management of parties and celebrations with the parents ahead of time. Sandwiches, pizza, popcorn, fruit and ice-cream are all suitable for children with diabetes. Low joule diet soft drinks can be provided or brought from home if desired.

Excursions

Planning is the key to trouble-free excursions.

Details which need to be considered include the:

- timing of meals (delaying meals may cause a low blood glucose level)
- timing of insulin injections and blood glucose tests
- access to snacks and meals (on public transport etc)
- need to carry an adequate supply of food (for example sandwiches, chips, biscuits, dried fruit) without relying on purchasing food or snacks when needed
- exercise or activities included.

Camps

Camps enhance self-esteem, are fun, and promote confidence and independence. Children and students with diabetes can participate fully in a camp program, as long as planning is done early and well.

Families need to meet with camp organisers well beforehand to discuss any special needs. Occasionally a parent or guardian may be invited to attend the camp if the child/student with diabetes is not fully independent. Given sufficient time, the camp organisers can arrange additional supervision. Camp organisers should be mindful of their choice of location if young people need emergency health service support.

Some students can attend camp and self-manage when they are reliably independent in the care of their diabetes. This includes the ability to:

- inject insulin
- monitor their blood glucose and ketones
- recognise and treat low blood glucose levels early
- avoid low blood glucose levels by understanding the need for:
 - meals and snacks to be on time
 - eating carbohydrate at each meal and snack time
 - taking extra carbohydrates with vigorous exercise of more than 30 minutes.

Support planning

Families and the staff need to discuss the care and support plans for the camp including:

- insulin administration

- blood glucose and ketone monitoring
- food planning
- prevention of low blood glucose levels
- recognising and treating low blood glucose levels (including the availability of glucagon to be administered by nursing, medical or paramedical personnel)
- strategies if the person becomes unwell, eg blood or urine ketone monitoring
- when to call for help and 24 hour emergency medical services (an adult will need to be nominated to provide emergency care when 24 hour emergency medical services are not available).

In general, the child/student's friends and room-mates should be aware of the diabetes. All members of staff must be informed about the support plan. The extra exercise at camps increases the risk of low blood glucose levels, including overnight. Insulin dosages are usually reduced, but staff members are not expected to be involved with adjusting insulin. Daily telephone contact with the child's family can be helpful to assist with diabetes management, particularly insulin dose adjustment. Carbohydrate-containing foods should be served at every meal and snack time and meals should not be delayed. Additional carbohydrate foods (dried fruit is excellent) are needed for exercise and must be readily available where the exercise is taking place.

Supplies for camping

The child/student with diabetes and his/her family needs to ensure that the staff have all the required diabetes equipment, hypo foods, and contact details of doctor/hospital. They also need to be able to keep the insulin cool in hot weather if a refrigerator is not available, eg in a cold pack. Safe sharps disposal (for syringes) should also be arranged.

Competitions, tests and exams

Students perform best at tests and examinations when their diabetes is in good control.

When blood glucose levels are low, the brain is deprived of glucose for energy, causing cognitive and other changes. When blood glucose levels are high, there is a need to urinate more frequently and easy access to toilets is required.



Blood glucose levels should be measured immediately before important tests and examinations and measures taken as outlined in the [diabetes care plan](#).

Students with diabetes need to be allowed to have access to their food and blood glucose monitoring equipment in case of low blood glucose levels during a test or examination. Discussions should occur beforehand to determine whether additional time will be allowed if a mild low blood glucose level has occurred immediately before or during a test or examination. If a severe hypo occurs, a claim for special consideration due to misadventure should be lodged with the testing authority.

Special provisions for senior examinations are available for students with diabetes. These provisions must be applied for in writing well before the examination date.

Boarding schools

Students with diabetes can attend boarding schools. Parents or guardians need to inform the school administrators, nurse, catering officer and school doctor about the diabetes and provide any special information concerning the diabetes. A 24 hour diabetes care plan must be formulated with the staff.

Details of emergency contacts and arrangements for sick days need to be provided before the initial attendance at school. Clear guidelines should be established. The school nurse should be provided with a Glucagen Hypo Kit[®] and a medication authority ([A – Z Health Support Index>medication>medication authority](#)) in case of a severe low blood glucose level, as well as ketone monitoring strips for use during sick days.



2.2 First aid and emergency care: staff responsibilities

2.2.1 Low blood glucose levels

All staff responsible for the supervision of a child/student with diabetes should be familiar with the signs and symptoms and the emergency treatment of a low blood glucose level. Urgent treatment is always required and the child/student should never be left unattended. Treatment for low blood glucose levels should be readily accessible at all times, particularly during exercise.

See flow charts for management of **low blood glucose levels**.

A low blood glucose level (below 4mmol/L) can be caused by:

- too much insulin
- not enough or delayed carbohydrate snacks or meals
- exercise.

A low blood glucose level can be prevented by:

- ensuring meals and snacks provided are eaten on time
- ensuring extra food/drink is provided for vigorous exercise of more than 30 minutes, as per individual care plan
- planning ahead for excursions and changes in routine, with the child/student's parents.

Additional Information:

Parents are trained to administer the Glucagen[®] to their child to treat a severe hypoglycaemic episode. Glucagen[®] is a synthetic version of the hormone glucagon. This hormone enables the liver to release stored glucose, raising the blood glucose level. **Education and children's services workers are not expected to give Glucagen[®] injections.**

2.2.2 High blood glucose levels

All children and students with diabetes will experience high blood glucose levels from time to time and treatment is usually not urgent, unless the child/student is unwell or using an insulin pump

See flow charts for management of **high blood glucose levels**

A high blood glucose level (above 15mmol/L) can be caused by:

- not enough insulin
- too much carbohydrate
- illness
- stress.

Children with a high blood glucose level often experience excessive thirst and frequent urination, so free access to water and the toilet should be provided.

2.2.3 Illness

Young people with diabetes should never be sent by themselves to seek first aid assistance or left unattended when feeling unwell, whether from high or low blood glucose levels or for some other reason. Generally it is safer to send for adult assistance to come to the child or student. It is not safe practice to send the child, with another child, to find assistance.

Young people with diabetes who are unwell, especially when vomiting, need urgent attention and emergency contacts should be contacted immediately.

3 Type 2 diabetes: Management

Lifestyle modifications such as diet, nutrition, weight loss and exercise are the key factors in the management of type 2 diabetes.

Other treatment options for type 2 diabetes may include insulin therapy or medication. A young person with type 2 diabetes, who is not on tablets or insulin therapy, is unlikely to experience low blood glucose levels (hypoglycaemia).



The health support plan should cover special needs and considerations including:

- creating a safe environment for the child or student
- assistance with recognition of signs and symptoms and appropriate treatment of hypoglycaemia (low blood glucose level) if using insulin
- adequate supervision of and ability to perform blood glucose monitoring
- taking of medication and/or insulin injections
- advocating and positively supporting healthy dietary behaviour
- encouraging physical activity.

The challenge of the future lies in the prevention of type 2 diabetes in young people, as well as supporting those already diagnosed to live a healthy and fulfilling life free of diabetes health-related complications.