

Sick Day Management

Information for Health Professionals

When young people with diabetes get sick, much greater care and attention is necessary to ensure their diabetes does not become unstable.

An illness, even a simple cold or flu, can affect diabetes control. Blood glucose levels (BGL's) rise as stress hormones are released in response to the illness. These hormones also have an 'anti-insulin' effect, so the insulin is less effective (this is called insulin resistance).

If, during an illness, high blood glucose levels remain untreated, ketones will develop in the blood (and can be found in the blood and urine when tested). The presence of ketones increases the risk of developing diabetic ketoacidosis (DKA).

What is Diabetic Ketoacidosis (DKA)?

Ketoacidosis is a very serious illness that occurs when the blood glucose and blood ketone levels are high. Ketoacidosis always results in a hospital admission and if severe enough, can be life threatening. The good news is that DKA can be prevented by following the steps below:

If sick with high BGL's & Ketones

To prevent Diabetic Ketoacidosis (DKA):

- Ensure extra insulin is given. Usually extra doses equal to 10-20% of the total daily insulin dose as rapid or short acting insulin.
- Several extra insulin doses may be needed to lower the BGL's and clear the ketones.

Sick Day Action Plan

Every young person with diabetes needs to have a 'Sick Day Action Plan' (refer to last page of this Fact Sheet).

The principles of a 'sick day' plan are as follows. Young people should:

- **never** stop insulin injections under any circumstances
- eat a normal or 'emergency' diet (glucose based fluids)
- drink extra fluids. Drink water if the BGL are high
- increase BG testing to every 1- 2 hours
- test blood or urine for ketones (at least every 2 hours)
- if the BGL's are above 15 mmol/L with ketones present in the blood or urine, extra insulin is needed immediately. If extra insulin is needed then rapid or short acting insulin is usually given.
- take less insulin if vomiting but **never** stop the insulin
- keep in contact with the diabetes team during illness.

Sick Day Action Plan For Your Young People with Diabetes

| Illness | Action |
|--|---|
| <p>Unwell e.g. Infection, Fever, Flu symptoms</p> | <ul style="list-style-type: none"> • Insulin must never be stopped (under any circumstances) • If on an insulin pump (see additional information below). • Eat normal or 'emergency' diet • Ensure you drink extra fluids. If the BGL is high drink water or other 'sugar free' drinks. • Test your blood glucose levels regularly (testing may need to be increased to every 2 hours) • Test blood (or urine) for ketones (at least every 2 hours) • If the BGLs are above 15 mmol/L and ketones are in the blood (or urine), contact the diabetes team immediately. • You will need extra rapid (or short) acting insulin. Usually 10-20% of the total daily dose. (see additional information below if on an insulin pump) • Several extra injections (or boluses) of insulin may be needed during the illness. • Keep in touch with your diabetes team while you are unwell. |
| <p>Vomiting & or Diarrhoea</p> | <ul style="list-style-type: none"> • Never stop your insulin (may need less if not eating) • If on an insulin pump (see additional information below). • Eat normal or 'emergency' diet. • Ensure you drink extra fluids. If BGL's are low give fluid containing glucose. • Test blood glucose levels more frequently (may need to be increased to hourly if not eating) • Test blood (or urine) for ketones (at least every 2 hours) • If BGLs are normal or low and ketones are present in the blood (or urine), contact the diabetes team. If the ketones persist you may need to be admitted to hospital. • If unable to keep your blood glucose levels above 5 mmol/L, or if vomiting or diarrhoea is excessive, you may need to be admitted to hospital. • Keep in touch with the diabetes team while you are unwell |

If on an Insulin Pump

Insulin pumps allow insulin adjustments to be made quickly and easily. The key to controlling diabetes during illness is to perform frequent blood glucose tests. In addition to the steps above **consideration needs to be given to** the following.

If BGL's are normal or low

A temporary basal rate so that less basal insulin than usual is given e.g. setting a temporary basal rate at 50% so that only half of the normal basal insulin is given.

Bolus insulin may not be needed unless the BGL goes above 15 mmol/L. If having difficulty maintaining the BGL above 4 mmol/L, the pump may need to be stopped for a short period of time.

Never stop an insulin pump for longer than 2 hours. The BGL's should be tested every hour and if necessary more frequently and contact must be maintained with the diabetes educator or doctor.

Note: Even if not eating insulin is still needed.

If the BGL's are above 15 mmol/L

A correction bolus should be given any time the BGL is above 15 mmol/L. If ketones are present in the blood or urine, an increase in the correction bolus may be necessary. It is not uncommon that several extra correction boluses are needed during illness.

To maintain BGL's under 15 mmol/L an increase in the basal rate may also be needed (basal rates can be increased by as much as 200%). In some circumstances it may be necessary to increase both the correction bolus and the basal rate.

Checking for ketones if BGL's above 15 mmol/L

It is recommended that **blood** ketones be tested when using an insulin pump. If this is not possible then, test the urine for the presence of ketones. Ketones must be tested for whenever the BGL is above 15 mmol/L. Contact with a diabetes doctor or educator immediately must be made if ketones are present.

If BGL's are not coming down

If the BGL's are not coming down after increasing the insulin via the insulin pump, the pump must be checked to ensure it is working properly and insulin is being delivered.

The following steps need to be taken to check the pump:

- Check that the last bolus was given. Give a correction bolus if last bolus was **not** given
- Check that there is insulin in the cartridge
- Check the tubing for leaks or kinks and the insertion site for leaking or redness.

Visit the Sweet Transition website at www.sweet.org.au

If there is only a minimal change in the BGL or the BGL is going higher, then either:

- Change the insulin cartridge and re-site the infusion set. **Not forgetting to prime the tubing (0.3 units of insulin)**. Reconnect and give a correction bolus, *or*
- Have an injection of insulin with a syringe

Recheck BGL in 1 hour, if no improvement an admission to hospital may be required.

Education Requirements:

| Topic | Contents |
|----------------------------|---|
| <i>Sick Day Management</i> | <ul style="list-style-type: none">• demonstrate testing of blood and/or urine for ketones• explain effects of illness on blood glucose control• explain how to adjust insulin doses during illness• discuss principles of prevention of Ketoacidosis |

For more detailed information visit the Queensland Government Diabetes Care Advance Website Module 6 and 7: Sick Day Management & Ketoacidosis.

Resource/s:

Stillman, J., Lang, E., Grieve, C., (2003) *Paediatric and Adolescent Diabetes Education Manual*, For Health Professionals. Queensland Health, Queensland Government Publication. Modules 6 and 7.