

Guidelines for Sick Day Management for Patients with Type 1 Diabetes

How does illness affect my diabetes?

When you get sick with a cold, flu, or an infection, your body is under stress. Insulin does not work as well in your body's cells and your blood sugar levels can be higher. This can happen even if you are taking normal doses of your medications, including insulin.

When you are sick, watch for these diabetes warning signs:

- High blood sugar that will not come down with treatment
- Nausea and vomiting
- Low blood sugar that will not come up after you eat
- Confusion or changes to your normal behaviour

If you have any of these warning signs and cannot treat them yourself, call your healthcare provider right away. Your family members or friends should know the warning signs so they can help you.

Having a plan before you get sick helps you manage your sick days. It is important to manage your sick days because you have a higher chance of going into diabetic ketoacidosis (DKA) when you are sick. Work with your diabetes care team to decide on an action plan that works for you.

Create a sick-day kit that includes:

- This handout
- A glucose meter and extra batteries
- Ketone meter and test strips
- Glucose tabs or gels
- Flu or cold medication that will not disrupt your diabetes management

How should I manage my diabetes if I am sick?

- 1 Check your blood sugar level more often (every two (2) to four (4) hours). Blood sugars must be kept less than 16 mmol/L. There may be times when you must take your blood sugar every hour. Keep track of your blood sugar levels, what time you tested, and the medications you have taken.
- 2 If you wear an insulin pump: change your insulin pump infusion site in case there is a blockage or an obstruction, before bolusing with insulin.

It is important to keep taking your insulin.
- 3 Check your ketones (blood or urine) every four (4) hours. If you test for ketones with urine, please speak to your diabetes care team as blood ketone testing is the recommendation.
- 4 Eat small meals often. Even if you are not eating as much, your blood sugar can still get very high. You may need extra insulin injections or higher doses during your illness.

- 5 Drink plenty of liquids to keep yourself hydrated. Try to drink one (1) cup (eight (8) ounces) of sugar free and caffeine free liquids such as water, herbal tea, soup broth, Crystal Lite® or a sugar free caffeine free soda every hour while you are awake.

6 If you are at risk of/or are dehydrated, you may need to stop taking certain medications. Ask your healthcare provider or pharmacist if you take any of these medications:

- Blood pressure pills
- Water pills
- Diabetes pills
- Pain medicine
- Non-steroidal anti-inflammatory drugs.

You can restart these medications when you are eating and drinking regular amounts.

7 If you are feeling too sick to eat your regular meals, try to eat or drink 15 grams of carbohydrate every hour to prevent any low blood sugars or hypoglycemia.

Food and drink with 15 grams of carbohydrate	
Liquids	Solids
2/3 cup (157 mL or 8 ounces) juice or regular pop	½ cup (125 mL or 4 ounces) of regular jello
1 cup (125 mL or 8 ounces) of milk	½ cup (125 mL or 4 ounces) of flavoured yogurt, pudding or apple sauce
1 cup (8 ounces) of Gatorade®	1 piece of fruit (apple, pear, orange)
1-2 popsicles (1 popsicle = 1 stick)	6 soda crackers

When should I call my healthcare team or go to the nearest emergency department?

If you vomit two (2) or more times in 12 hours. If you vomit and/or have diarrhea two (2) times and you cannot eat or drink anything in four (4) hours.

If you take extra insulin and your blood glucose does not go down.

If you get symptoms of diabetic ketoacidosis: abdominal pain, nausea, vomiting, difficulty breathing. This is a life-threatening condition, and you must go to the nearest Emergency Department.

If you cannot keep your blood glucose above 4.0 mmol/L.

Ketones

Glucose (a type of sugar) is the body’s main source for energy. When the body cannot use glucose for energy it uses fat instead. If you do not have enough insulin in your system, you cannot turn glucose into energy and that is when the body starts to break down fat. When fat is broken down, chemicals called ketones are made and show up in the blood and urine. If left untreated this can cause a buildup of ketones in the blood. This places you at risk for a condition called diabetic ketoacidosis (DKA) - a life threatening medical emergency.

When should I test for ketones

High blood glucose over 16 mmol/L on two (2) tests in a row, or a level agreed upon by your diabetes healthcare team.

Test your blood or urine for ketones every four (4) hours.

Nausea, vomiting, abdominal pain.

Insulin Dose Adjustment Guidelines for Sick Day Management in patients with Type 1 diabetes

Calculate your total daily dose (TDD)

Total Basal Insulin	Units	PLUS	Total Rapid Insulin	EQUALS	Total Daily Dose (TDD)	Units
Blood Glucose (blood sugar)		Ketones (blood or urine)		Action Required		Your Dose (round up to nearest unit)
Less than 3.9 mmol/L		Negative		No extra insulin required. Decrease meal dose (at least 10%). Treat low blood sugar. If you are vomiting contact your diabetes care team.	No change	
4.0 – 16.0 mmol/L		Blood: less than 0.6 mmol/L Urine: negative to trace		Take your usual dose of insulin.	No change	
4.0 – 16.0 mmol/L		Blood: 0.6 mmol/L or higher Urine: trace to moderate		Take an additional 10% of your total daily dose (TDD).	units	
Greater than 16.0 mmol/L		Blood: less than 0.6 mmol/L Urine: negative to trace		Take an additional 10% of your total daily dose (TDD).	units	
Greater than 16.0 mmol/L		Blood: 0.7 – 1.4 mmol/L Urine: Trace to moderate		Take an additional 15% of your total daily dose (TDD).	units	
Greater than 16.0 mmol/L		Blood: 1.5 mmol/L or higher Urine: moderate to large		Take an additional 20% of your total daily dose (TDD). Call your diabetes care team or go to the nearest emergency department.	units	

- 1 Check your glucose and ketones every four (4) hours if your blood glucose is greater than 16.0 mmol/L on two (2) tests in a row.
- 2 If you are not eating the same as you usually do, consider replacing the usual carbohydrate with sugar-containing fluids or adjust the mealtime rapid insulin dose to match your reduced carbohydrate intake.
- 3 Take these extra doses of rapid insulin every four (4) hours, in addition to your usual doses of insulin. Repeat as needed every four (4) hours (using your glucose and ketone results) until your blood glucose is consistently less than 16.0 mmol/L and ketones are less than 0.6 mmol/L in blood or negative to trace in urine.
- 4 **When should I go to the nearest emergency department?** If you vomit two (2) or more times in 12 hours. If you vomit and/or have diarrhea two (2) times and you cannot eat or drink anything in four (4) hours.