

Sick Day Management for People with Type 1 Diabetes

When you are unwell, managing your glucose levels can be a challenge. Be prepared and know how to manage your diabetes when you are sick.

Important reminders

1. Take diabetes medication as usual. **Insulin treatment should never be stopped. If you are not eating anything at a meal, you should not take your usual rapid acting insulin dose. Continue to take your long-acting insulin.**
2. **Check your glucose level** if you are experiencing hyperglycemia every 2 hours while you are awake and every 4 hours overnight.
3. **Check your ketones** using urine ketone strips or a blood ketone meter if your glucose level is >14mmol/L or if you are experiencing abdominal pain, nausea, vomiting or diarrhea. When you have ketones, it indicates you need more insulin and you need to drink water or carbohydrate-free fluids.
4. Drink plenty of fluids – $\frac{1}{2}$ - $\frac{3}{4}$ cup (125-180ml) every half an hour to prevent dehydration.
5. Try to consume meals as usual; it might also be necessary to drink sugary beverages if it is not possible to take in carbohydrates through food (aim for 130 g of carbohydrate per day).

Create a sick day management plan CHECKLIST:

- Keep all your written instructions in an easily accessible place (on the fridge, etc)
- Prepare all your supplies (back up insulin pens, glucagon, glucose meter and strips, ketone strips, etc)
- Have a readily available supply of sugar containing clear fluids
- Write out a plan with how much extra insulin to take when glucose levels are high
- If you are on a pump, have the contact information of the pump company available if there are any concerns with your pump
- Keep a list of contact information for your diabetes team, family doctor, endocrinologist on call, telehealth Ontario and ambulance (911)
- If not eating well and at risk of dehydration, do not take metformin, SGLT2-I (Jardiance, Forxiga, Invokana) – visit www.diabetes.ca (search 'sick day medication list')

Insulin Adjustments:

Based on glucose levels, you may need to make insulin adjustments when you are sick.

If you are not on an insulin pump.

Never stop taking your basal (long acting) insulin.

- Continue to take your meal time insulin.
- The insulin dose may need to be increased and it might be necessary to take additional doses of rapid-acting insulin to bring down glucose levels.
- **The Total Daily Dose (TDD)** formula helps to decide how much **extra rapid acting insulin** you need to take. See table below to determine extra rapid insulin dose.

Add up the number of units of **ALL** insulin (rapid and long acting insulin) that you take in 24 hours (when not ill).

The TDD = _____ units.

Calculate 5%= _____ 10% = _____ 15% = _____ 20% = _____ of TDD. This is **the extra dose**.

Example: TDD = 50 units

5% (50 units x 0.05) = 2.5 units

10% (50 units x 0.1) = 5 units

15% (50 units x 0.15) = 7.5 units

20% (50 units x 0.2) = 10 units

Table 2: Type 1 diabetes supplement Insulin doses (see calculation above)

If ketones are		Give this much rapid-acting insulin		
Urine ketones	Blood ketones	Glucose level 10.1-13.9 mmol	Glucose Level 14-20 mmol	Glucose Level >20 mmol
Negative -	< 0.6	Usual insulin correction dose for non-illness days.	Add 5% of your total daily dose to your usual rapid dose.	Add 10% of your total daily dose in addition to usual rapid dose.
Trace +/-	0.6-0.9	Usual insulin correction dose for non-illness days.	Add 5% of your total daily dose to your usual rapid dose.	Add 10% of your total daily dose to your usual rapid dose.
Small +	1.0-1.49	Add 5% of your total daily dose to your usual rapid dose.	Add 10% of your total daily dose to your usual rapid dose.	Add 15% of your total daily dose to your usual rapid dose.
Moderate ++	1.5-2.9	Add 10% of your total daily dose to your usual rapid dose.	Add 15% of your total daily dose to your usual rapid dose.	Add 20% of your total daily dose to your usual rapid dose.
Large +++	> 3.0	Add 15% of your total daily dose.	Add 20% of your total daily dose and contact MD and/or go to the hospital.	Add 20% of your total daily dose and contact MD and/or go to the hospital.

If having low glucose levels, you may need to decrease your basal dose by 10-20%.

If you are on an insulin pump

- **Insulin treatment should never be stopped.**
- It might be necessary to take additional doses to bring down glucose levels (both basal and extra correction doses)

Start with the **CHECKLIST**

- Is your site working? Please change the infusion set, tubing and site and attempt a different insertion site.
- Has your insulin expired? Try a new vial of insulin.
- If your glucose levels are not improving using extra correction doses, then take a correction with rapid-acting insulin by insulin pen or syringe

Basal adjustments to manage hyperglycemia (high glucose level)

- Consider increasing basal rate by 10% for 4 hours using temporary basal.
- If effective after 4 hours, continue at this temporary basal rate.
- If not effective, increase your temporary basal rate by 20% and reassess in 4 hours.
- Be cautious about using an increased temporary basal rate overnight.

Bolus adjustments to manage hyperglycemia (high glucose level)

- If glucose levels are still elevated with the increased temp basal, please consider taking 1.5x your current **calculated correction dose only (not the meal dose)**
eg. If your calculated correction dose is 4 units
1.5x 4 units = 6 units
Take 6 units correction in addition to your meal insulin (if eating)

Basal adjustments to manage frequent hypoglycemia (low glucose level)

- Consider using a temporary basal rate, decreasing by 15-20% for 4 hours and reassess.

When to I ask for help?

- If your glucose level stays lower than 4 mmol/L for 2 consecutive readings and does not respond to hypoglycemia treatment.
- If your glucose level stays higher than 14 mmol/L for 2 or more readings and does not respond to increased insulin and fluids.
- If you have moderate to high or high ketones.
- If you do not know how to adjust your insulin.
- If you have been sick for 2 days and are not getting better.
- If you have symptoms of dehydration, such as dry mouth, extreme thirst, little to no urination or darker urine than usual.
- If you are unable to eat or drink due to vomiting.

Dietary Recommendations:

- If you are unable to follow your usual meal plan, have 10-15 grams of carbohydrate every hour. Try to consume a minimum of 130 grams per day.
- Make sure you are drinking liquids if you are unable to keep down solid food. Drink one cup of liquid every hour while you are awake to prevent dehydration. If you are unable to hold down liquids, you may need to go to the emergency room or hospital.

You may need to choose lighter foods such as those listed below. Each of these items equals approximately 15 grams of carbohydrate or 1 carbohydrate choice.

- $\frac{2}{3}$ cup regular soft drink (not diet, avoid caffeinated drinks)
- $\frac{2}{3}$ cup fruit juice
- 1 twin popsicle
- $\frac{1}{2}$ cup prepared Jell-O™, flavoured gelatin or jelly powder(not diet)
- 1 cup sports drink
- 1 cup chicken noodle soup or cream soup*
- $\frac{1}{2}$ cup cooked cereal
- $\frac{1}{2}$ cup plain ice cream*, custard*, pudding*, apple sauce
- 1 slice toast
- 7 soda crackers
- $\frac{1}{2}$ cup flavoured yogurt*

*(consider limiting milk products if vomiting or diarrhea)

If glucose is more than 14mmol/L, drink at least 1 cup of carbohydrate-free fluids per hour and these can include:

- Water
- Any no sugar added liquid/powder water enhancer (ie. Crystal Light)
- Clear soup or broth
- Diet soft drink
- Tea

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