

The Balancing Act Of Blood Glucose (BG) During Illness

EXTRA INSULIN is often needed to balance high BGs due to stress of illness.

BLOOD GLUCOSE ↑ These things make BG go **HIGHER** during illness

- Less Active
- Stress

BLOOD GLUCOSE ↓ These things make BG go **LOWER** during illness

- Eating Less
- Vomiting

Seek Medical Attention If

1. Vomiting occurs twice or more in a four hour period, BGs are elevated, and ketones are present.
2. BGs and ketones remain high even after extra doses of rapid-acting insulin.
3. BGs remains low even after using mini-dose glucagon.
4. Your child shows signs of dehydration (such as dry mouth, heavy breathing, not urinating/peeing), **OR** becomes drowsy, confused, or has a seizure (convulsion).
5. You feel that you need help to manage the illness.

Insulin Dose Adjustment Guidelines

Blood Ketone Level (mmol/L)	BG level (mmol/L) Greater than 14.0			This is given as extra doses of rapid insulin (e.g. NovoRapid®, Humalog®, Apidra®, Fiasp®) every 3-4 hours – it is added to your usual insulin. It replaces your sliding scale correction.
	0.6 – 1.5	1.5 – 3	Greater than 3.0	
Urine Ketone Level	Small (+)	Moderate (++)	Large (+++/++++)	
If your total daily dose is...	10% is...	15% is...	20% is...	
5-15 units	1	1.5 or 2	2	
16-25 units	2	3	4	
26-35 units	3	4.5 or 5	6	
36-45 units	4	6	8	
46-55 units	5	7.5 or 8	10	
56-65 units	6	9	12	
66-75 units	7	11	14	
76-85 units	8	12	16	

Giving Mini-Dose Glucagon

1 Follow instructions on glucagon package to mix.

2 Inject using an insulin syringe. To calculate this dose:

Age	Units
Less than 2	2 units
2 – 14	1 unit per year of age
15 and older	15 units

3 Check BG every 30 minutes. If not improved (if less than 5), give double the dose but only to a maximum of 30 units. To calculate this dose:

Age	Units
Less than 2	4 units
2 – 14	2 units per year of age
15 and older	30 units

4 You may repeat the dose that works every hour (as needed) to keep BG greater than 5.

Be sure to eat if you can.

To give mini-dose glucagon, you will need: **Glucagon & an insulin syringe** Once mixed, glucagon is good for 24 hours in the fridge.



Paediatric Diabetes Network

Managing Diabetes During An Illness

Short Version

This document is to be used as a guide. It is not intended to be a substitute for medical advice, or to replace local treatment recommendations.

For references, please refer to the long version.

English and French version of the guidelines can be accessed here: <https://bit.ly/2CVdMPC>



What To Do

- **Parents should help** with BG testing and insulin injections. **Never** leave your child/teen to manage their diabetes when ill. Provide support, guidance and possibly take over the management of the child's diabetes during this time.
- **Check BG and ketones every 2-4 hours** around the clock.
- **Continue giving insulin – never miss a dose**, even if your child is not eating. Give extra rapid-acting insulin when the **BG is over 14 and you find ketones**. Use the **Insulin Dose Adjustment Guidelines** in this pamphlet.
- **Treat the illness**. You may need to take your child to the doctor for a diagnosis and treatment. Use sugar-free medications, if possible.
- **Avoid dehydration**: Drink extra sugar-free fluids. Try to follow your meal plan as much as possible. If you cannot, aim for about 15 grams of carbohydrate each hour (e.g. ½ cup of juice, 1.5 sticks of popsicle, 1 cup of regular Gatorade, ½ cup ginger ale or ⅓ cup Jell-O). **Be sure to check the labels for your products.**

What To Do - Continued

- **Take vomiting seriously**, don't just assume it is the flu. Vomiting with a high BG and ketones may be a sign of DKA. This is why it is so important to check ketones. **Vomiting can be caused by missing insulin doses, pump site failure, or illnesses**. Vomiting can also lead to dehydration and vomiting with a normal or low BG can lead to hypoglycemia.
- **Avoid hypoglycemia**: Mini-dose Glucagon® may be used to prevent or correct a low BG, especially if your child cannot eat or drink. Be sure to have an emergency **Glucagon®** kit at home.

Total Daily Dose (TDD)

- The **total daily dose (TDD)** is the total number of units of rapid, intermediate, and long acting insulin that you would give on a normal day (corrections or sliding scale are NOT added to the TDD). If you are on Multiple Daily Injections (MDI) with ratios, use a typical rapid insulin dose for each meal in the calculation.

Insulin Dose Adjustment Guidelines*

Blood Glucose Level	What to do?
Less than 4.0 mmol/L	Do not give extra insulin (even if there are ketones). You may need to reduce pre-meal insulin and call health care team if vomiting. Consider mini-dose Glucagon if not tolerating food or fluids.
4.0 to 14.0 mmol/L	Take the usual insulin dose. No changes needed.
Greater than 14.0 mmol/L	Take an extra 10-20% of TDD as rapid insulin right away depending on level of ketones. (See table on the back)

**Some centres will have different guidelines for those on insulin pumps.*

If you are on a pump, a high glucose with ketones is likely due to pump site failure. You should give insulin by injection and do a site change.