

**MY DIABETES SICK DAY ACTION PLAN**

# Type 1 diabetes: Medtronic 780G insulin pump

**This guide can help you plan how to manage your diabetes when you are feeling sick and know when to get medical help.**

Illness and infection may raise or lower your blood glucose levels and make it harder to manage your diabetes. A plan to manage sick days before you become unwell is essential.

The Australian Diabetes Educators Association (ADEA) recommends you work with your Credentialed Diabetes Educator (CDE) to prepare a sick day kit. Keep it up to date. Your sick day kit should always include your personal sick day action plan.

**Be prepared for managing diabetes when you are unwell.**

- Know when to use your sick day plan.
- Have a sick day kit prepared and check it regularly to replace any expired items.
- Know how often to monitor your glucose and ketone levels.
- Know how to adjust your insulin doses on your pump.
- Keep a selection of suitable foods and fluids to consume when you are unwell.
- Know who to call if you need help with managing your diabetes while unwell.
- Know when to seek urgent medical help.

**Name:**

**Date of plan:**

## My emergency contacts:

Credentialed Diabetes Educator:

Endocrinologist:

General practitioner:

Local hospital emergency:

Healthdirect:

**1800 022 222** (24-hour health advice helpline)

### Follow your sick day action plan when:

- you feel unwell, even if your glucose level is within your target range
- your glucose level is higher than 13 mmol/L for 2–4 hours or more, even if you feel well
- you have positive ketones in your urine or blood (0.6 mmol/L or higher on blood check OR small or higher on urine check).

### Why it's important to be prepared for sick days

When you are sick, your body produces stress hormones like cortisol and adrenaline. These stress hormones often cause your glucose levels to rise.

You will usually need to take extra insulin to keep your glucose levels in range. If you don't give extra insulin, your body may not be able to use the glucose in your blood for energy and so will break down fat instead. This causes ketones to be produced, which are acidic and toxic to the body in large amounts. You may also develop ketones if you are not eating and are taking less insulin because of vomiting or diarrhoea.

High ketones can lead to a serious condition called diabetic ketoacidosis (DKA) which may need urgent medical attention.

High ketones and/or DKA can also develop if your pump stops delivering insulin because of a pump failure or a problem with your infusion set.

Symptoms of DKA include:

- nausea, vomiting and/or stomach pain
- increased thirst and/or a dry mouth
- increased urination
- rapid breathing or shortness of breath
- fruity-smelling breath
- feeling drowsy, weak, or confused.

If you experience any of these symptoms, it is important that you seek urgent medical help.

### What to have in your sick day kit

Your diabetes sick day kit should contain all the items you might need to manage your diabetes when unwell, including:

- your sick day action plan, including emergency contact details (people you can call on for help if needed, such as family, friends or neighbours, members of your healthcare team and your local hospital emergency department)
- spare insulin pump cartridges and infusion sets
- spare insulin pens and pen needles or syringes (in case of pump failure or to give supplemental insulin)
- a record book/diary or smartphone app to record your glucose and ketone levels, and insulin doses taken
- a thermometer (optional)
- foods to treat hypoglycaemia (hypos) such as glucose gels, tablets, or jellybeans
- easy-to-eat carbohydrate foods such as plain biscuits or crackers
- drinks including water, sweetened and sugar-free drinks
- fluids such as Gastrolyte® or Hydralyte® (these can help to keep you hydrated if you are vomiting or have diarrhoea)
- pain relief medications (if you use a continuous glucose monitor (CGM), check whether some pain medications (paracetamol) may affect the accuracy of your device)
- a printed copy of your current pump settings.

Remember to check your sick day kit at least every three months to make sure items haven't expired. Replace used items.

## Sick day action plan

### Key steps for managing your diabetes on a sick day

- Check your glucose and ketone levels every 2 hours if ketones are above 0.6 mmol/L and every 4 hours if ketones are less than 0.6 mmol/L. It is recommended that you do finger prick glucose monitoring in addition to using CGM. Blood ketone monitoring is recommended over urine strips as it is more accurate.
- If your glucose and/or ketones are elevated (ketones above 0.6 mmol/L on blood test or small/moderate/large on urine test and/or blood glucose above 13 mmol/L for more than 2 hours), change your insulin cartridge and infusion set and use the guidelines below and on the following pages to adjust your insulin doses.
- You may need to turn off SmartGuard and return to manual mode if your pump isn't managing your high blood glucose levels and preventing ketones.
- Always continue taking your basal insulin (via your pump basal delivery).
- Continue to eat and drink if possible.
- Try to have 125–250 mL fluid per hour to avoid dehydration (unless your doctor has asked you to restrict your fluid due to other health conditions).
- Treat episodes of hypoglycaemia (hypos) with 8-10g rapid-acting carbohydrate and repeat every 15 minutes until your glucose level is above 4 mmol/L.
- Confirm out of range CGM readings with a finger prick blood glucose check before taking action to correct them, remembering that there is a lag time between the two readings.
- It is also important to confirm CGM readings with a with finger prick glucose check if you are taking paracetamol as this medication can cause falsely elevated CGM readings with the Medtronic Guardian 4 sensor, which means you could miss a low blood glucose level.
- If you have significant vomiting and/or diarrhoea, see guidelines on page 5.
- Go to hospital if your blood ketones remain above 1.5 mmol/L (moderate to large on urine check) and glucose remains above 13 mmol/L following two correction doses given 2 hours apart.

### Adjusting your insulin: no ketones

If ketones are below 0.6 mmol/L on a blood check OR negative/trace on a urine check, you should:

- continue to check glucose levels at least every 2 hours and ketones at least every 4 hours
- continue to bolus for carbohydrate foods and fluids using your usual carb ratio (via your pump bolus calculator)
- give regular correction doses (every 2 hours) using your pump bolus calculator, even if you are not eating
- use the guidelines on the following page if glucose levels are below 4 mmol/L or above 13 mmol/L.

### Adjusting your insulin: elevated ketones

If ketones are present (0.6 mmol/L or higher on blood check OR small or higher on urine check):

- check your pump history to find your total daily dose (TDD) – on your pump, go to Options → History → Summary → 7 days: Insulin Delivery Overview, or check your Carelink reports
- adjust your insulin doses according to the guidelines on the following pages
- continue to monitor glucose and ketone levels every 2 hours.

### Medtronic 780G with SmartGuard: additional guidelines

#### Low blood glucose levels (below 4 mmol/L), no ketones (below 0.6 mmol/L on blood check or negative/trace on urine check)

- Treat episodes of hypoglycaemia (hypo) with 8–10g rapid-acting carbohydrate and repeat hypo treatment every 15 minutes until above 4 mmol/L.
- If your blood glucose levels are staying low, turn on the temporary target function and continue until blood glucose level is above 10 mmol/L.
- If blood glucose levels remain low despite using the temporary target, consider changing your blood glucose target in SmartGuard (*Home Screen > SmartGuard > SmartGuard Settings > Target*) to a higher target (e.g. if your current target is 5.5 mmol/L, change to 6.1 mmol/L; if your current target is 6.1 mmol/L, change to 6.7 mmol/L).
- If blood glucose levels remain low despite the temporary target/change of target, turn off SmartGuard (*Home Screen > SmartGuard > SmartGuard on and off*) and reduce your pump basal rate by 20–30% (by programming a reduced temporary basal rate on your pump: *Home Screen > Insulin > Basal > Temp Basal*). Continue to monitor blood glucose levels and continue the lower basal rate until your blood glucose level is above 10 mmol/L.
- Once your blood glucose level has reached 10 mmol/L, turn off the temporary basal rate and turn SmartGuard back on (*Home Screen > SmartGuard > SmartGuard on and off*).

#### High blood glucose levels (above 13 mmol/L for 2 or more hours), no ketones (below 0.6 mmol/L on blood check or negative/trace on urine check)

- If your blood glucose levels are staying high (above 13 mmol/L for 2 or more hours), first change your pump cartridge and entire infusion set.
- Turn off SmartGuard (*Home Screen > SmartGuard > SmartGuard on and off*) and increase your pump basal rate by 30–50% (by programming an increased temporary basal rate of 130–150% on the pump: *Home Screen > Insulin > Basal > Temp Basal*). Continue to monitor blood glucose levels and continue the higher basal rate until your blood glucose levels return to your target range.
- Bolus for carbohydrate foods and fluids using your usual carb ratio (via pump bolus calculator)
- Give regular correction doses (every 2 hours) using your pump bolus calculator, even if you are not eating.
- Once your blood glucose levels have returned to your target range, turn SmartGuard back on (*Home Screen > SmartGuard > SmartGuard on and off*).

#### High blood glucose levels (above 13 mmol/L for 2 or more hours) and high ketones (0.6 mmol/L or higher on blood check OR small or higher on urine check)

- Turn off SmartGuard (*Home Screen > SmartGuard > SmartGuard on and off*) and follow the guidelines in the table on the following page.
- Once your ketones are below 0.6 mmol/L on blood check or negative/trace on a urine check, turn SmartGuard back on (*Home Screen > SmartGuard > SmartGuard on and off*).



**Review your manual mode settings every 3 months to make sure they are correct.**

## Type 1 diabetes: Medtronic 780G insulin pump

### Usual Total Daily Dose (TDD):

5% TDD	10% TDD	15% TDD	20% TDD

### Adjusting your insulin doses on your pump if you have ketones and turn off SmartGuard

Name:

Date:

KETONES	GLUCOSE LEVEL			
	Less than 4 mmol/L	4.1-8.0 mmol/L	8.1-13.0 mmol/L	Above 13.0 mmol/L
<b>Blood:</b> 0.6-1.5 mmol/L  <b>Urine:</b> small (+)	<ul style="list-style-type: none"> <li>Treat hypoglycaemia with 15g fast-acting carbohydrate</li> <li>Recheck your glucose level and repeat hypo treatment every 15 minutes until glucose is above 4 mmol/L</li> <li>Recheck ketones in 2 hours</li> </ul>	<ul style="list-style-type: none"> <li>Check glucose and ketones every 2 hours</li> <li>Eat or drink foods or fluids containing at least 15-20g carbs and bolus using your usual carb ratio</li> <li>Continue your usual basal rate</li> </ul>	<ul style="list-style-type: none"> <li>Check glucose and ketones every 2 hours</li> <li>Give 5-10% of TDD as correction bolus using a pen</li> <li>Change infusion set and cartridge</li> <li>If ketones remain high, continue to give correction doses of 5-10% of TDD every 2 hours using the pump (override pump bolus calculator and enter insulin units)</li> <li>Bolus using usual carb ratio when eating or drinking carbohydrate foods or fluids</li> </ul>	<ul style="list-style-type: none"> <li>Check glucose and ketones every 2 hours</li> <li>Give 10-15% of your TDD as correction bolus using a pen</li> <li>Change infusion set and cartridge</li> <li>If ketones remain high, continue to give correction doses of 10-15% of TDD every 2 hours using the pump (override pump bolus calculator and enter insulin units)</li> <li>Bolus using your usual carb ratio when eating or drinking carbohydrate foods or fluids</li> <li><i>If glucose levels remain high, increase pump basal rate by 20-30% (a temporary rate of 120-130%) and continue until ketones are less than 0.6 mmol/L</i></li> </ul>
<b>Blood:</b> above 1.5 mmol/L  <b>Urine:</b> moderate /large (++)/(+++)	<ul style="list-style-type: none"> <li>Treat hypoglycaemia with 15g fast-acting carbohydrate</li> <li>Recheck your glucose level and repeat hypo treatment every 15 minutes until glucose is above 4 mmol/L</li> <li>Recheck ketones in 2 hours</li> </ul>	<ul style="list-style-type: none"> <li>Check glucose and ketones every 2 hours</li> <li>Eat or drink foods or fluids containing at least 15-20g carbs and bolus using your usual carb ratio</li> <li>Continue your usual basal rate</li> </ul>	<ul style="list-style-type: none"> <li>Check glucose and ketones every 2hrs</li> <li>Give 10-15% of your TDD as correction bolus using a pen</li> <li>Change infusion set and cartridge</li> <li>If ketones remain high, continue to give correction doses of 10-15% of TDD every 2 hours using the pump (override pump bolus calculator and enter insulin units)</li> <li>Bolus using your usual carb ratio when eating or drinking carbohydrate foods or fluids</li> <li><i>If glucose levels remain high, increase pump basal rate by 10-20% (a temporary rate of 110-120%) and continue until ketones are less than 0.6 mmol/L</i></li> </ul>	<ul style="list-style-type: none"> <li>Check glucose and ketones every 2 hours</li> <li>Give 15-20% of your TDD as correction bolus using a pen</li> <li>Change infusion set and cartridge</li> <li>If ketones remain high, continue to give correction doses of 15-20% of TDD every 2 hours using the pump (override pump bolus calculator and enter insulin units)</li> <li>Bolus using your usual carb ratio when eating or drinking carbohydrate foods or fluids</li> <li><i>If glucose levels remain high, increase pump basal rate by 30-50% (a temporary rate of 130-150%) and continue until ketones are less than 0.6 mmol/L</i></li> </ul>

### Managing your diabetes when you have vomiting and/or diarrhoea

If you have vomiting and/or diarrhoea and are finding it hard to eat or drink, your risk of developing ketones (starvation ketones) is increased, even if your glucose levels are low or within your target range. Nausea, vomiting and stomach pain can also be symptoms of high ketones.

If you are unwell with vomiting and/or diarrhoea, it is important to check your glucose levels and ketones every 1–2 hours.

To reduce your risk of ketones, you should:

- Always keep taking your basal insulin. However, you may need to reduce your basal delivery on your pump if you are having continual low blood glucose levels (see page 4).
- Try to have 125–250 mL fluid per hour to avoid dehydration (unless your doctor has asked you to restrict your fluid because of other health conditions).
- Continue to eat and drink if possible, and choose carbohydrate-containing foods and fluids. If you are not eating your usual meals, aim for around 15 g of carbohydrate per hour (from either food or drinks) during waking hours.
- If you are vomiting, wait for 30 minutes after eating to give a rapid-acting meal bolus for the carbohydrate, to make sure you have kept the food down and your glucose level has risen.

- If you take any of the following diabetes medications, stop taking them while you have vomiting, diarrhoea, or are not eating much:
  - Metformin (brand names include Diabex, Diaformin, Metex, Formet)
  - SGLT2 inhibitors (brand names include Forxiga, Qtern Xigduo, Jardiance, Jardiamet, Glyxambi) ***These medications can increase the risk of developing DKA when you are unwell***
  - GLP-1 agonists (brand names include Victoza, Saxenda, Ozempic, Mounjaro, Wegovy).
- You can restart these medications when you are feeling well again (normally when you have been eating and drinking normally for 24–48 hours).

**Note:** these medications are sometimes used off-label for people with type 1 diabetes



#### You should consider going to hospital if you:

- have vomiting that doesn't settle down
- cannot keep fluids down
- cannot keep your blood glucose level above 4.0 mmol/L
- develop high ketones (above 1.5 mmol/L on blood check or moderate/large in urine)
- are too unwell to manage your diabetes yourself.



### Seek help if needed

- When you're unwell, it can be hard to follow your sick day action plan, especially if it's the first time.
- Include in your sick day action plan details of who might stay with you to help support you. This could be a family member, friend, or neighbour.
- Phone your CDE/healthcare team early for help. This may prevent you from getting worse and needing emergency care.
- Seek medical advice to treat the underlying illness or infection.



### You must seek urgent medical help if:

- your glucose levels continue to rise despite two supplemental (extra) doses of insulin given 2 hours apart (i.e. after 4 hours)
- your blood ketone levels remain above 1.5mmol/L (moderate/large in urine) and are not decreasing despite two supplemental (extra) doses of insulin given 2 hours apart (i.e. after 4 hours)
- your glucose levels remain below 4.0 mmol/L despite two hypoglycaemia treatments
- you have persistent vomiting, especially for more than 4 hours, or if it becomes stained with red or yellow/green
- you become drowsy or confused
- you develop deep or unusual breathing
- you have stomach pain
- you have symptoms of severe dehydration (including increased thirst, dry mouth, weakness, feeling faint or dizzy, rapid heartbeat, headache, confusion, blurred vision, dry skin and lack of sweating, and reduced urination or dark urine)
- you or your support person(s) cannot carry out or follow your sick day action plan.

## The NDSS and you

Whether you have just been diagnosed with diabetes, or have been living with diabetes for a while, the NDSS provides a range of support services, information, and subsidised products to help you manage your diabetes, stay healthy and live well. For access to more resources (including translated versions), or to find out more about support services, go to [ndss.com.au](https://ndss.com.au) or call the **NDSS Helpline 1800 637 700**.

This information is intended as a guide only. It should not replace individual medical advice. If you have any concerns about your health, or further questions, you should contact your health professional.