AOTEAROA DIABETES COLLECTIVE

Your guide to Insulin Pump Therapy: Adult edition

YpsoPump with CamAPS FX

Version 2.0

Title: ***Your Guide to Insulin Pump Therapy: Adult edition***

Version: 2.0
Date: June 2025

Primary Authors:
Claire Lever, Diabetes Nurse Specialist, Aotearoa Diabetes Collective
Solita Donnelly, Diabetes Nurse Specialist, Aotearoa Diabetes Collective
Rachael Sampson, Diabetes Nurse Specialist, Aotearoa Diabetes Collective

Acknowledgements

We would like to extend our sincere thanks to the following colleagues for their expertise and invaluable contributions to this guide:

- Celeste Keesing, Registered Dietitian
- Rhian Teaz, Nurse Practitioner, Aotearoa Diabetes Collective
- Associate Professor Dr. Ryan Paul, University of Waikato
- Professor Dr Ben Wheeler, University of Otago
- Associate Professor Dr Martin de Bock, University of Otago
- Sandeep Sharma, Pharmaco Diabetes NZ
- Katie Lee, NZMS Ltd

Tēnā rawa atu koutou!

Contact Information:
Aotearoa Diabetes Collective Ltd
170 Collingwood Street, Hamilton Lake, Hamilton, Aotearoa New Zealand 3204
Email: kiaora@aotearoadiabetescollective.org.nz
Phone: (+64)800 439 232

Table of Contents

AOTEAROA DIABETES COLLECTIVE

Introduction

Tēnā koe,

Nau mai haere mai, welcome to Your Guide to Insulin Pump Therapy. This document is designed to support adults and rangatahi (young people) who are preparing to start insulin pump therapy with automated insulin delivery. This guide has been developed by a team of clinicians working at, or alongside Aotearoa Diabetes Collective.

This guide is intended to be used by non-pregnant people with type 1 or pancreatogenic (type 3c) diabetes to support self-management of insulin pump and automated insulin delivery (AID) systems for adults (and their whānau). It is not a complete guide to managing your diabetes or a substitute for medical advice, diagnosis, or treatment. This guide should be used alongside appropriate preparation for pump therapy by your clinical team, including (but not limited to) carbohydrate awareness and quantification (carb counting), technical pump training (operation and troubleshooting) and education tailored to your individual needs.

Specific insulin management recommendations should be determined with your clinical team. We recommend that you make contact with your usual diabetes healthcare provider before making changes to your diabetes management plan or pump/AID system.

This document will be updated regularly to reflect evidence based changes in pump/AID systems management. You can request an up to date guide by contacting Aotearoa Diabetes Collective directly. Please do not copy or adapt this guide without acknowledging Aotearoa Diabetes Collective as the author.

Ngā mihi nui,

Aotearoa Diabetes Collective
Kiaora@aotearoadiabetescollective.org.nz

Glossary

Understanding terms and acronyms

Active Insulin Time - How long the insulin is programmed to be 'active' for
AGP - Ambulatory Glucose Profile; a summary report of CGM data trends
AID - Automated Insulin Delivery system
App - Smartphone application
Auto-mode - AID mode where insulin is automatically adjusted
Basal - Background insulin delivered continuously
BGL - Blood Glucose Level
Bolus - Insulin dose for food or high glucose
Bolus Calculator - A tool in the insulin pump/app that calculates the bolus amount
Boost Mode - CamAPS FX setting to increase insulin delivery
Carbohydrate ratio - Grams of carb covered by 1 unit of insulin
Cartridge/Reservoir - Holds insulin inside the pump
CGM - Continuous Glucose Monitor
Correction - Extra insulin to lower high glucose
Correction Factor - Glucose drop (mmol/L) per 1 unit of insulin
DKA - Diabetic Ketoacidosis
Ease-off Mode - CamAPS FX setting to reduce insulin delivery
Exercise Activity Mode - Control-IQ setting to prevent hypos during activity
Extended Bolus - Bolus given over time, often to cover high-fat/protein meals
GMI - Glucose Management Indicator; estimated HbA1c from CGM
ICR - Insulin to carbohydrate ratio
Infusion set - Needle/cannula, tubing, and insulin cartridge
Infusion site - Site where the cannula enters the body
Insulin pump consumables - Cartridge/reservoir and infusion sets
Insulin sensitivity factor - Glucose drop per 1 unit of insulin
Ketones - By-product from burning fat instead of glucose
Ketone Plan - A plan to manage high ketones and prevent DKA.
Lipohypertrophy - Scarred/lumpy area of tissue that can affect insulin absorption
Manual Mode - Pump mode with user-controlled insulin delivery
Pump - Insulin pump device
Sleep Activity Mode - Control-IQ mode to stabilise overnight glucose
Special Authority - PHARMAC process that applies funding to your prescription
TAR/TBR - Time Above/Below Range; % of time outside 3.9-10.0 mmol/L
TDD - Total Daily Dose of insulin (basal + bolus)
TIR - Time in Range; % of time 3.9-10.0 mmol/L
Transmitter - Sends CGM data via Bluetooth

Helpful Contacts & Links

Tip: Save all of the relevant numbers in your phone

Key Contacts

Healthline: 0800 611 116

GP Clinic:

Diabetes Service:

Study Nurse: 0211386417 - ACCESS AID

Company Contacts:

Mediray (Freestyle Libre CGM)
Website: www.freestylelibre.co.nz
Tech support: 0800 106 100 option 2

NZMS (Tandem pump & Dexcom CGM)
Website: www.nzmsdiabetes.co.nz
Tech support: 0508 634 103 (24/7)
Dexcom technical support online form
https://nzmsdiabetes.co.nz/dexcom-technical-support/
Cloud for uploading & sharing data

- Tandem Source (Tandem t:slim X2 pump with Control-IQ)
- Glooko (Tandem t:slim X2 pump with Control-IQ)
- Dexcom Clarity (Dexcom CGM only)

Pharmaco NZ (YpsoPump and Caresens meters)
Website: www.pharmacodiabetes.co.nz
Tech support: 0800 458 267 (24/7)
Cloud for uploading & sharing data

- Glooko (myLife YpsoPump with CamAPS FX)

Insulin Pump Basics

What you need to know about pumps and Automated Insulin Delivery (AID)

What is an AID System?

Understanding how Automated Insulin Delivery (AID) works

What is AID?

AID stands for automated insulin delivery. AID requires three components;
An **insulin pump** paired with a **CGM** and an **AID algorithm.** The algorithm is stored in either the insulin pump itself or a smart phone app that communicates with the insulin pump via Bluetooth.

AID systems automatically adjust your insulin delivery aiming for your target glucose level. However, you still need to bolus (give insulin) for meals by entering the amount of carbohydrate you eat. You also need to let the system know about changes in your activity such as exercise. Different systems work slightly differently, it is a good idea to know how the automation works before deciding which AID system is right for you (see Appendix)

What is the different between manual pumping and AID?

Insulin pumps can be used in two different modes: manual mode and AID mode (Automated Insulin Delivery). Manual mode means you are in charge of all insulin delivery. The pump gives background insulin (basal) at a set rate, and you decide when to give extra insulin (boluses) for meals or corrections. The pump doesn't make any adjustments based on your glucose levels - it just follows the settings programmed in.

AID mode uses a continuous glucose monitor (CGM) and smart algorithms to help manage your insulin delivery. The pump automatically increases or decreases background insulin based on your glucose levels and trends. Some AID systems can also give correction boluses. You'll still need to give meal boluses and enter carbs, but the system helps smooth out ups and downs in the background.

- If you're not in AID mode—for example, if your CGM stops working—the pump will automatically switch to manual mode and deliver your programmed basal insulin rates. This helps keep you safe, even when automation is temporarily paused.

Prescriptions

For insulin pumps, pump consumables and CGM

This page outlines the way insulin pumps, pump consumables and CGM sensors are prescribed and dispensed by your pharmacy every three months.

Insulin pump

- 1 insulin pump is funded every 4 years

Insulin pump consumables

Tandem cartridges

- 10 per box
- Up to 5 boxes every 3 months
- Up to 19 boxes per year

Tandem Infusion Sites

- 10 per box
- Up to 5 boxes every 3 months
- Up to 19 boxes per year

Ypsomed reservoirs

- 10 reservoirs per box
- Up to 9 boxes every 3 months
- Up to 36 boxes per year

Ypsomed infusion sites

- 10 per box
- Up to 5 boxes every 3 months
- Up to 19 boxes per year

Continuous Glucose Monitors (AID compatible)

Dexcom G6 (10 day sensor)

- 9 sensors & 1 transmitter per pack
- 1 pack every 3 months
- Up to 5 packs per year

Freestyle Libre 3 plus (15 day sensor)

- Up to 6 sensors every 3 months
- Up to 28 sensors per year

Dexcom G7 (10 day sensor)

- Up to 9 sensors every 3 months
- Up to 40 sensors per year

Special Authority Renewals

A special authority is a process that applies PHARMAC funding to your prescription using a Special Authority number. After the initial special authority, your diabetes team will need to renew the Special Authority for your insulin pump, pump consumables and CGM every few years.

- Every 2 years for your insulin pump consumables and CGM
- Every 4 years for your insulin pump

Warranty, Faults & Insurance

For insulin pumps and CGM

Insulin pumps

Insulin pumps are covered by a manufacturers warranty for four years. During your technical training you will be given warranty information for your specific insulin pump. If you have an issue with your pump you, should always contact their customer support team who will assess the problem, assist you with troubleshooting and arrange a replacement pump if there is a fault covered under the warranty, Please refer to the helpful contact numbers at the front of this guide and save your pump company technical support into your phone contacts.

The warranty lasts for four years, after which your diabetes team will renew your special authority and do a prescription for a new insulin pump.

If your insulin pump is lost, stolen or damaged (in a manner that is not covered by warranty) you will need to replace it. **Therefore it is recommended that you have your insulin pump listed under contents insurance.**

Continuous Glucose Monitors (CGM)

CGM sensors are covered by a manufacturers warranty. If you have an issue with your CGM applicator, the sensor being faulty, failing early or being knocked off then you can contact the company to trouble shoot and/or organise a replacement sensor. You should always contact the company if there if you have a faulty sensor, rather than using your own stock to prevent running out of your allocated allowance for CGM. Please refer to the helpful contact numbers at the front of this guide and save your CGM technical support number into your phone contacts. For Dexcom CGM there is an online form that you can complete rather than phoning NZMS/Dexcom.

For faulty sensors that are reading inaccurately they will often request that you do at least two comparative blood glucose checks at least five minutes apart. You may also be asked to send the faulty sensor back to the company for testing, if this happens they will send you a courier bag.

Smart phones

if you use a phone to control your insulin pump, then you should also ensure that is covered under your contents insurance. If you urgently need a phone and do not have insurance or sufficient funds, you should contact your diabetes team who can help you navigate this and provide a support letter for Work and Income (WINZ) to apply for a special needs grant or temporary additional support.

Bolusing for Food

Bolusing for food and counting carbohydrate with an insulin pump and AID system

Giving Insulin for a Meal on YpsoPump (AKA a 'Food Bolus')

Giving a food bolus using mylife Ypsopump and CamAPS FX app

Carbohydrates increase blood glucose more than fat, protein or fibre. With the CamAPS system, announcing either a specific carbohydrate amount, or small/medium/large/extra large carbohydrate meal amount to your pump, at time of eating, will result in an insulin dose that is more effective at achieving predictable blood glucose levels. This reduces the risk of very high and low blood glucose.

When to give a food bolus?

Announcing carbohydrates 10-15 minutes before eating (pre-meal bolus) gives insulin a 'head start'. This reduces the rise in blood glucose after a meal. Do not pre-meal bolus if blood glucose is less than 4.3 mmol/L, or if you have an urgent low glucose alert. If you have a low appetite, announce the minimum amount of carbohydrates that you think you will consume in the pre-meal bolus. At the end of the meal, if more carbohydrate was eaten, deliver an extra bolus for the extra carbohydrate eaten.

Missed a food bolus?

The system will automatically increase insulin delivery in response to rising blood glucose. If it is more than 30 minutes since you ate, don't give a full bolus, as you are more likely to have a low blood glucose. If eating finished more than 30 minutes ago, consider either:

- Announcing HALF of the carbohydrate into the bolus calculator
- Activating 'Boost' setting (35% increase in insulin)
- Do nothing and let the system give automatic corrections

Protein & Fat:

Despite protein and fat not containing carbohydrates, for some people, more than ~40g protein and/or more than ~30g fat, i.e. fish & chips, can increase blood glucose from 2 hours to 12 hours after eating.

For higher fat and/or protein meals that you notice cause higher blood glucose, consider either:

- Do nothing and let the system manage it
- 'Boost' mode (delivers ~35% more insulin)
  This will stop once glucose levels reach personal target (13 hours maximum run time)
- Use slowly absorbed meal option/button

Carbohydrate counting and announcement made easier:

- Use apps and online tools
- Prepare food in advance / look at the menu before eating out
- Make regular meals the same way each time
- Using alerts/alarms to remind you to announce carbohydrates and give a bolus
- Do your best - no one gets it right all the time!

Recommended Apps / Websites

- Easy Diet Diary
- CalorieKing
- Carbs and Cals
- New Zealand Food Composition Data
- Supermarket websites

Notes

Write down any extra notes, or individualised plans that are specific for your diabetes management.

Hypoglycaemia

Low blood glucose levels

How to Treat Hypoglycaemia

People with type 1 diabetes using AID insulin pump therapy

What is hypoglycaemia?

Hypoglycaemia means your glucose level is below 3.9 mmol/L. (also known as a 'hypo' or a 'low').

Common Causes of Low Glucose Levels:

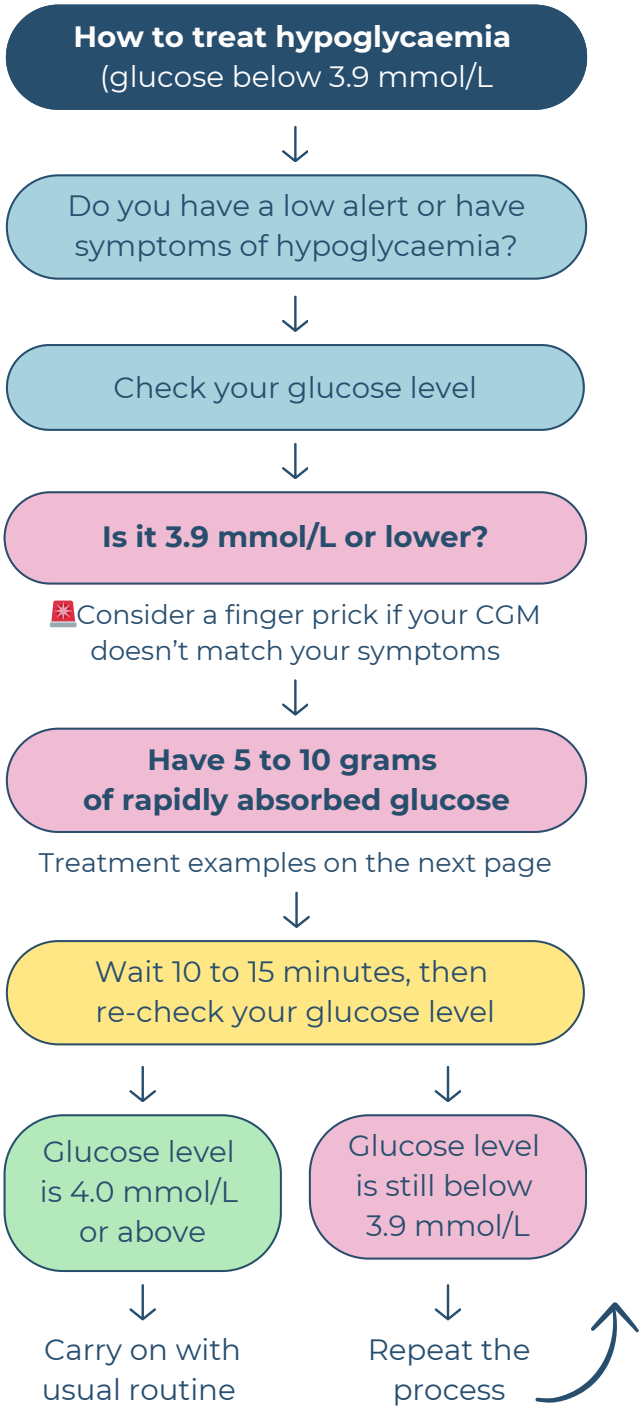
Not eating enough carbohydrates for the insulin you took, doing more exercise or changing your activities, Drinking alcohol Not adjusting insulin when your body becomes more sensitive (like when breastfeeding or after exercise).

Common Symptoms

- Sweating
- Shaking
- Feeling anxious
- Hunger
- Dizziness
- Weakness
- Anger
- Confusion
- Blurry vision
- Fast heartbeat

How to treat mild Hypoglycaemia:

Use fast-absorbing glucose (like glucose tablets, juice, or sugary in water). You won't need as much glucose as you did when you used multiple daily injections of insulin because the system will have suspended background insulin delivery.



⚠️ **Always treat hypoglycemia if you have an 'Urgent Low Soon' alarm regardless of glucose level!**

Examples of Hypo Treatment

What specific amounts of glucose actually looks like

Common Hypo treatment options	Amount of Glucose (approx)	Recommended for 5 to 10 grams
Dextrose tablets 	3 grams per tab	2 to 3 tabs
Jelly beans (small not jumbo) 	2 grams each	3 to 5 small jelly beans
Mentos 	2 grams each	3-5 mentos lollies
Juice box 	Varies from 6 grams up to 25 grams	1 JustJuice Slash or Half a Twist juice box
Hypo gel (Hypofit/HypoPak) 	15 to 18 grams	Half a hypo gel pack
Sugar (dissolved in water) 	4 grams per teaspoon	1 to 2 teaspoons
Fizzy drink (full sugar) 	30 grams per 330ml can	A quarter to a third of a can (full sugar)

⚠️ Important note about treating hypoglycaemia ⚠️

When using an insulin pump with AID, you need a lot less glucose to treat hypoglycaemia (low glucose) compared to multiple daily injections of insulin. This is because the system will have already reduced or suspended insulin delivery to prevent the low glucose.

If you 'over-treat' by using too much glucose, this can cause rebound hyperglycaemia (high glucose), which may result in the system then giving you more insulin to bring your glucose back to target. It can take time to adjust to using less glucose, but it will help to keep your glucose levels more stable.

Severe Hypoglcyaemia

How to manage severe hypoglycaemia with glucagon

What is severe hypoglycaemia?

A hypo is severe if you're unconscious, very drowsy, can't swallow, or need help from someone else to treat it. If someone has frequent hypos, they might not feel symptoms until their glucose is very low, or they might not feel symptoms at all (this is called hypo-unawareness).

How to treat severe hypoglycaemia

- If the person can swallow safely then assist them to have rapidly absorbed glucose orally.
- If the person cannot swallow safely, is drowsy or unconscious then you need to call 111 for help and give them a glucagon injection!

You should be prescribed a glucagon pen (Orange Hypokit). Check the expiry regularly as they expire every 1-2 years.

⚠️ Important notes ⚠️

It is common for people to vomit (be sick) after a glucagon injection. To prevent them from choking, keep them in the recovery position until help arrives.

If you have disconnected the pump, make sure that it is reconnected after the blood glucose level is above 4.0mmol/L as they still need background insulin delivery.

How to manage severe hypoglycaemia
if the person cannot swallow safely or is unconscious

↓

Call 111 for help
if they are drowsy or unconscious

↓

Check their airway is clear and put the person in the recovery position

↓

Check the blood glucose & disconnect the pump (if practical)

↓

Give glucagon injection into a big muscle (e.g. thigh)

🚨If you don't have glucagon available you can rub hypo gel, jam or honey into their gums - but be careful about choking!

↓

Recheck the glucose level every 10 to 15 minutes

↓

When conscious and able to swallow safely continue treating the hypoglycaemia with oral rapidly absorbed glucose

↓

Stay with the person until medical help arrives

↓

⚠️ **Refer to important notes**

Hypoglycaemia and NZTA Driving Guidelines

Mild hypoglycaemia driving guidelines

Defined as being able to treat hypoglycaemia independently (without help)

- NZTA recommend that you **should not drive for 1 hour** after treating mild hypoglycaemia (low blood glucose).
- It takes approximately 45-60 minutes for your brain to recover from a hypo (low blood glucose level). Your reaction times may be impaired and you are also more at higher risk of another hypoglycaemia episode.

Severe hypoglycaemia driving guidelines

Defined as needing help from someone else to treat hypoglycaemia

- NZTA recommend that you **should not drive for 24 hours** after treating a severe hypoglycaemia (low blood glucose) that occurs when you are not driving.
- After severe hypoglycaemia, your body's stored glucose will be depleted and you are more likely to have more low blood glucose levels.
- If you have severe hypoglycaemia **while driving you should not drive for 1 month**
  - You will need to see a Specialist Doctor or Nurse Practitioner before you can return to driving.

Motor vehicle accident caused by hypoglycaemia guidelines

- NZTA recommend that you **should not drive for 1 month** If you have a motor vehicle accident caused by hypoglycaemia.
- You will need to see a Specialist Doctor or Nurse Practitioner before you can return to driving.

Notes

Write down any extra notes, or individualised plans that are specific for your diabetes management.

Hyperglycaemia and Sick Days

Managing high blood glucose levels and sick days / illness

Hyperglycaemia / High Glucose

Understanding hyperglycaemia when using an insulin pump

What is hyperglycaemia / high blood glucose levels?

High glucose levels means that there is not enough insulin available to move glucose from the blood to the body cells for energy. Hyperglycaemia is defined as a glucose level above 8.0 mmol/L, but more commonly referred to when glucose levels are above target range of 3.9 to 10.0 mmol/L. It is very difficult to maintain blood glucose levels within target range all the time!

Often, there is a reason for temporarily high glucose levels. Your insulin pump AID algorithm will automatically give extra insulin to try bring your glucose down to the target glucose or glucose range. You can also give an extra correction bolus or use other functions that increase insulin delivery (these vary based on the AID system).

Because insulin pumps only use rapid acting insulin, if there is not enough insulin or no insulin is delivered for two or more hours, this can quickly lead to very high blood glucose levels and developing high ketones. This can happen much more quickly compared to multiple daily injections of insulin because there is no long acting insulin in the background. It is very important to trouble shoot and manage high glucose levels quickly to prevent developing ketones and reduce the risk of diabetic ketoacidosis (DKA).

Common causes of hyperglycaemia / high glucose levels

- Illness / stress
- Hormonal changes (menstrual cycle / pregnancy / puberty)
- Certain medications (especially steroids)
- Missing bolus insulin
- Not enough basal insulin
- Over treating hypoglycaemia (low blood glucose levels)
- Underestimating carbohydrate calculations
- Being less active than usual
- Expired or insulin that has gotten too hot or too cold.
- Pump issues (pump faults, or site failures)
- Putting pump sites in lumpy tissue (lipohypertrophy)

Troubleshooting Guide for High Glucose or Ketones Levels

Follow this guide to figure out the cause of high glucose/ketones

1. Check for issues with your glucose readings	Is your CGM reading accurately? Finger prick to check blood glucose	Was the test accurate? Wash your hands and recheck your blood glucose
2. Check for issues with the pump	Is the pump on, battery charged and time correct?	Have there been any alarms or alerts indicating a pump fault? Is there insulin leaking out of the pump?
3. Check for issues with infusion line and site	Check the tubing. Are there any air bubbles, kinks, or blood in the line?	Check the infusion site. Is the cannula in place? Is it sore or are there any signs of infection or leaking insulin?
4. Check for issues with the last site change	If last site change was over 2-3 days ago: do a full site change with fresh insulin & equipment	Recent site change: Did you forget to prime the line or cannula? Check the pump history.
5. Check for issues with your insulin	Did you use fresh insulin with your last site change? Check the expiry date.	Where is your insulin stored? Has it gotten too hot or too cold? Has it been over 30 days since you opened the vial (discard if so)
6. Check for missed bolus insulin	Have you missed a bolus? Check the pump history for the last bolus time and amount delivered.	Did you miscalculate or underestimate the carbohydrate in your last meal/snack
7. Check for missed basal insulin	Is the right basal programme running? Is the automated mode turn on (if applicable)	Have you forgotten to end a temporary rate or change a mode back to normal (eg. exercise or sleep)
8. Check for issues with your health	Are you stressed, sick, or do you have an infection?	Have you started a new medication / steroids?

Sick Days and Illness

Managing sick days / illness with an insulin pump & AID

Managing illness with diabetes can be challenging. Often people have high glucose levels and need more insulin than normal when they are sick. The insulin pump AID system will automatically increase insulin delivery, however you may need to activate different settings or temporarily adjust your settings to avoid getting very high glucose levels, high ketones or the risk of DKA.

Tips for managing sick days with diabetes

- **Tell someone you are unwell / sick**
- **Never stop your insulin pump!**
- **Check your glucose levels regularly**
- **Check your ketones + follow ketone plan if ketones are high**
  - Keep checking if your glucose levels are high or if you are dehydrated
- **Drink plenty of fluids**
  - Sipping water regularly or having ice blocks will help keep you hydrated
- **Try to eat small regular meals**
  - Even small amounts of carbohydrate like plain toast, crackers or fruit
- **Call your diabetes team for help managing high or low glucose levels**
  - You can also visit Healthify type 1 diabetes sick day plan
- **Call your GP or Healthline for help managing illness**

My Sick Day Plan:

If my glucose levels are high: _____

_____

_____

If my glucose levels are dropping low / I can't eat: _____

_____

_____

Medications I need to pause if I am dehydrated: (vomiting/diarrhoea/fever)

_____

_____

Ketones and DKA

Understanding ketones and diabetic ketoacidosis

Ketones are a waste product that is produced when your body is using fatty acids for energy instead of glucose. This is a normal process, especially if you are fasting or have not been eating much carbohydrate. However if there is a LACK of insulin, this process can go into overdrive causing high glucose levels and high levels of ketones in the blood stream. If this is not managed quickly with extra fluid and insulin, it can lead to a life threatening condition called diabetic ketoacidosis (DKA).

The pump only uses rapid acting insulin, which means your blood glucose levels and blood ketones will rise quickly if there is a problem with the pump or infusion site (where the insulin enters the body). You need to act quickly following the ketone plan because you don't have any long acting (basal) insulin anymore.

What are the symptoms of DKA?

- Nausea and/or vomiting
- Rapid breathing
- Fruity or acidic smelling breath
- Abdominal (tummy) pain
- Drowsiness/unable to stay awake or loss of consciousness (call 111)

🚨When you should go to hospital with high ketones🚨

Most of the time you can manage high ketones at home by following your ketone plan, giving extra insulin, drinking water and trouble shooting issues with your insulin pump. You can contact your diabetes team for support or if you are worried.

⚠️If you have high ketone levels AND have symptoms of DKA you need to take a pen injection of rapid acting insulin following your ketone plan and go to hospital.

Remember to take your insulin, and insulin pump supplies with you to the hospital. Keep drinking water and following the ketone plan to prevent your ketones getting higher before you get medical attention.

Understanding ketone levels

Knowing what blood ketone levels mean and what you need to do

When to check ketones

- If you have a glucose level above 15.0mmol/L or
- If you have symptoms of positive/high ketone levels or DKA
- If you are sick or unwell

Mild symptoms

Similar to symptoms of high glucose levels

- Peeing a lot
- Very thirsty
- Dry mouth
- Dry, cool skin
- Feeling tired or fatigued

Moderate symptoms

Usually ok to manage at home with ketone plan

- Nausea (feeling sick)
- Abdominal pain (sore tummy)
- Fruity or acidic smelling breath
- Feeling very tired, fatigued or weak

Severe symptoms

Consider going to hospital or calling 111

- Vomiting (being sick)
- Severe abdominal (tummy/puku)pain
- Rapid/fast breathing (often long exhales)
- Drowsiness, unable to stay awake or loss of consciousness - call 111 or go to hospital!

Understanding blood ketone levels

Positive or high ketones are 0.6 mmol/L or higher. It is often safe to manage small, moderate and even large amounts of ketones at home using the ketone plan, However, you should always consider go to hospital if you have signs of DKA.

Less than 0.6 mmol/L	Between 0.6 to 1.4 mmol/L	Between 1.5 to 2.9 mmol/L	3.0 mmol/L or higher
Negative or normal amount	**Trace to moderate amount**	**Moderate to large amount**	**Large to very large amount**
↓	↓	↓	↓
No action is needed - continue with your usual routine	Follow ketone plan if glucose level is above 15.0 mmol/L or if you have symptoms of high ketones	Follow ketone plan! Consider going to hospital if you have symptoms of DKA or symptoms are getting worse	Follow ketone plan! Consider going to hospital if you have symptoms of DKA or symptoms are getting worse

Ketone Plan

Managing **high ketones** levels at home on an insulin pump

How to manage high blood ketone levels at home

Check your ketone level if glucose is staying above 15.0 mmol/L or you have symptoms

Ketones are 0.6 - 1.4 mmol/L
(trace to moderate amount)

Do a full pump site change
(insulin, cartridge and infusion site)
& trouble shoot - refer to guide

Give a correction via the pump

Drink plenty of water

Tip: Drink at least 1 glass of water or sugar-free fluid every 30 minutes

Ketones are 1.5 mmol/L or higher
(large to very large amount)

Give pen/syringe injection
use 1.5x usual amount of correction

Turn Auto-mode/Control-IQ off
until ketones have resolved.

⚠**Warning:** the pump will not consider the insulin on board from the pen injection!
Refer to the next page for how to manage

Do a full pump site change
(insulin, cartridge and infusion site)
& trouble shoot - refer to guide

Drink plenty of water

Wait 1 hour then recheck glucose and ketone level

Ketones are below 0.6 mmol/L

Continue usual routine

⚠**Refer to the next page if you gave a pen injection and/or have turned off Auto-mode / Control-IQ**

Ketones are between 0.6 to 1.4 mmol/L

Repeat the process, but skip the pump site change

Ketones are still 1.5 mmol/L or higher

Repeat the process, but skip the pump site change

⚠**Consider going to hospital if symptoms are getting worse!**

What to Do After Using an insulin Pen/Syringe

Returning to automated insulin delivery (AID) on the pump safely after using an insulin pen/syringe to manage positive ketones

⚠️**Important:** When you give insulin with a pen or syringe, your insulin pump and AID algorithm doesn't know about that extra insulin on board. This is why we **must turn Auto-mode / Control-IQ off** or the algorithm will keep trying to give more insulin. Once you have cleared the ketones, you need to be cautious before you turn Auto-mode/Control-IQ back on to avoid stacking insulin and causing hypoglycaemia.

Option 1. Tell the pump/algorithm about the extra insulin on board at the time of the pen or syringe injection	**Option 2.** Manually record (write down) the extra insulin on board that has been given via pen or syringe
⚠️Make sure that **Auto-mode / Control-IQ is turned off** when managing ketones!	
Step 1. After each pen/syringe injection, temporarily disconnect the pump from your body. **Step 2.** Run a bolus for the same amount of insulin (as the pen / syringe injection) - but let it run onto the floor or into a tissue. NOT INTO YOUR BODY! **Step 3.** Reconnect the pump to your body so you continue to get basal insulin delivered. **Step 4.** Continue following the ketone plan and repeat the process for every pen/syringe injection. **Step 5.** Once ketones have resolved (less than 0.6 mmol/L) **you can turn Auto-mode / Control-IQ back on straight away!**	**Step 1.** After each pen / syringe injection, write down the time and amount of insulin given. It will take 3-4 hours for the insulin from each injection to be gone. **Step 2.** Continue following the ketone plan and repeat the process for every pen/syringe injection. **Step 3.** Once ketones have resolved (less than 0.6 mmol/L) **wait 3-4 hours after the last pen injection before you turn Auto-mode / Control-IQ back on**. ⚠️ **Warning:** Turning Auto-mode / Control-IQ back on too early can lead to too much insulin being delivered (stacking) and cause hypoglycaemia.

Correcting with an Insulin Pen when Managing Ketones

Managing correction with pen injections

This graph is based on 1.5x your usual correction dose of rapid acting insulin.

Blood Glucose Level	1.5 x usual correction
10 mmol/L	_____ units
11 mmol/L	_____ units
12 mmol/L	_____ units
13 mmol/L	_____ units
14 mmol/L	_____ units
15 mmol/L	_____ units
16 mmol/L	_____ units
17 mmol/L	_____ units
18 mmol/L	_____ units
19 mmol/L	_____ units
20 mmol/L	_____ units
21 mmol/L	_____ units
22 mmol/L - HIGH	_____ units

Notes

Write down any extra notes, or individualised plans that are specific for your diabetes management.

Time Off the Pump

Going back to Multiple Daily Injections (MDI)

Back-up Kit Checklist

mylife YpsoPump and CamAPS AID system

It is important to have a back-up kit ready to go with basic supplies for your pump. This includes spare insulin, pump supplies, a dual glucose and ketone meter and CGM supplies, along with treatment for hypos (low blood glucose levels), alcohol wipes, batteries and/or a power pack.

Insulin pump back-up checklist

1.	**AAA batteries** 	6.	**Glucose/ketone meter** 
2.	**Spare rapid acting insulin** Stable at room temp for 28 days 	7.	**Glucose & ketone test strips** 
3.	**Spare pump reservoir/s** 	8.	**Alcohol + skin prep wipes** 
4.	**Spare Infusion Sets** 	9.	**Insulin pen & needles** 
5.	**Spare CGM sensors** 	10.	**Hypo treatment** 

How to Go Back to Multiple Daily Injections (MDI) of Insulin

Being prepared in case you need to have time off the pump

It doesn't happen often, but sometimes there are problems or faults with insulin pumps which means insulin delivery stops. Sometimes people remove their insulin pump for a medical procedure, playing sports or a day at the beach. It is important to know how to switch back to insulin injections if you need to. If you go without insulin for more than 2 hours, it can lead to very high glucose levels, high ketones and a risk of diabetic ketoacidosis (DKA).

Be prepared with your back up kit available
Be ready with your backup kit - visual checklist in appendix.

Long acting insulin (basal insulin)
If you will be disconnected from your pump for more than a few hours, take long acting insulin. It's best to take it 2 hours before you disconnect so it has time to start working. If your pump stops working or you have to remove your pump suddenly, take the long acting insulin immediately.

My long acting insulin is called: _____
- Needs to be mixed? Yes / No

I need to take _____ units every _____ hours with an insulin pen while my pump is disconnected from my body.

Tips:

- Check the expiry date of your long acting insulin regularly
- Don't use insulin that has been open or out of the fridge for more than 28 days
- Use a separate insulin pen for long acting insulin
- Humulin NPH and Protaphane NPH last 12-18 hours and need to be mixed gently before use
- Lantus lasts 24 hours and may come in a disposable pen and does not need to be mixed
- If you don't have backup insulin, you can get an emergency supply from any pharmacy, contact your GP, or go to A&E

Rapid acting insulin (Bolus)

For food and correction insulin, use a pen or syringe. If you're only disconnected from your pump for a short time (like for a swim at the beach), you can give yourself rapid acting insulin every ___ hours for corrections.

My rapid acting insulin is called _____

My food bolus doses:

- Breakfast 1 unit for every ___ grams of carbohydrate
- Lunch 1 unit for every ___ grams of carbohydrate
- Dinner 1 unit for every ___ grams of carbohydrate
- Overnight 1 unit for every ___ grams of carbohydrate

My correction bolus doses

- Morning 1 unit for every ___ above ___ mmol/L
- Afternoon 1 unit for every ___ above ___ mmol/L
- Evening 1 unit for every ___ above ___ mmol/L
- Overnight 1 unit for every ___ above ___ mmol/L

How to work out your correction bolus dose

Formula:
Current Glucose level - Target glucose = Glucose difference
Glucose difference ÷ Insulin sensitivity factor = Correction dose

_____ mmol/L - _____ mmol/L = _____ mmol/L ÷ _____ = _____ units

Steps:

1. Get your current glucose from your sensor / glucose meter
   Example 14.0 mmol/L (current glucose)
2. Know your target glucose
   Example 6 mmol/L (target)
3. Use current glucose and subtract the target glucose to get your glucose difference
   Example: 14 mmol/L (current) – 6 mmol/L (target) = 8 mmol/L (difference)
4. Divide by your insulin sensitivity/correction factor (ISF) - how many mmol/L 1 unit of insulin lowers your glucose)
   Example: 8 mmol/L ÷ 3 (ISF) = 2.6 units of insulin (correction dose)
5. You can round this up to 3 units, or use a half unit pen to give 2.5 units

Reconnecting to Your Pump

Reconnecting to your insulin pump and AID system safely after a period of using insulin injections

When did you last have long acting insulin?

If you have had a long acting insulin injection, you should delay reconnecting to your insulin pump until it has nearly run out. This is because the insulin pump AID system will not know about this insulin on board and will continue to give you basal insulin. which could cause hypoglycaemia.

I can reconnect to my insulin pump / AID system _____ hours after my last injection of _____ (long acting insulin).

When did you last have rapid acting insulin?

If you have had an injection of rapid acting insulin via a pen in the last three hours and you are reconnecting to your pump, it may not be safe to turn Auto-mode / Control-IQ on as the system will not be aware of the extra insulin on board.

⚠️**Warning:** It is usually safest to run the pump in manual mode until 3 hours after the last rapid acting insulin pen injection was given. Talk to your healthcare team about other strategies for managing this situation.

Notes

Write down any extra notes, or individualised plans that are specific for your diabetes management.

Exercise

Managing the pump while you are moving your body

Managing Exercise with an Insulin Pump

Exercise is a really important part of overall health for people who live with diabetes. It can be really challenging to manage activity and blood glucose levels. Different types of exercise cause different glucose responses.

Aerobic exercise

Aerobic exercise is any activity that gets your heart rate up and makes you breathe harder while using large muscle groups. It's often called "cardio" and includes activities like walking, jogging, cycling, swimming, gardening and dancing.

Often your blood glucose levels to go down during and/or after this type of exercise and make your body more sensitive to insulin, which means you are more at risk of hypoglycemia/low glucose levels. This increased risk of may persist for several hours after exercise.

Anaerobic exercise

Anaerobic exercise is a type of exercise that involves short bursts of intense activity where your muscles work hard without using oxygen as their main energy source. Instead, they rely on stored energy in your muscles. Examples of anaerobic exercises include sprinting, weightlifting, and high-intensity interval training (HIIT). Often blood glucose levels go high with this type of exercise, especially if done first thing in the morning.

Trial and error

Like anything with diabetes - what happens to your glucose levels with different types of exercise will be very specific to you. Often people have to take a ‘trial and error’ approach to work out how to manage your glucose levels with exercise. It is a good idea to try do the same sort of activity at the same time, and write down the response to your glucose levels, then adjust the strategy next time.

Strategies to Manage your Glucose Levels with Exercise

Managing exercise while on an insulin pump

Monitor glucose levels

- Take your CGM with you wherever possible
- Consider also taking a glucometer than can check blood ketones

Do not disconnect from you pump for long than 2 hours

- If you are doing prolonged periods of activity and you cannot wear the pump, you will need to use insulin injections

Carry glucose to treat hypoglycemia/low glucose levels

Have your back-up kit ready to go with basic supplies for your pump.

Ensure safe glucose levels before starting exercise

- Aim for glucose levels between 7.0 and 10.0 mmol/L when starting exercise
- If your glucose levels are 5.0 to 6.9 mmol/L - start with very high intensity/anaerobic exercise or eat/drink 10 grams of glucose if doing aerobic exercise
- If your glucose is below 5 mmol/L - eat/drink 10 to 30 grams of glucose before exercise and start exercise once glucose is above 5 mmol/L
- Never start exercising if you have ketones above 1.0 mmol/L

Long periods of exercise will require you to fuel your body with carbohydrates during the exercise: talk to your diabetes team for advice

Using exercise mode

- Turn on the 'exercise mode' 1.5 to 2 hours prior to exercise if possible
- Keep exercise mode on for a period of time once exercise is finished if you have problems with hypoglycemia after exercise

Consider reducing a food bolus if eating within 1 hour of starting exercise

Check-list for Aerobic Exercise

For steady, heart-rate-raising activities like walking, cycling, or swimming (different from short, intense bursts of activity)

Types of aerobic exercise / activity I often do: _____
_____

- I will turn on the _____ function of my system _____ hours before starting exercise.
- If eating within _____ of exercise, my food bolus should be _____% of normal.
- My glucose level before starting exercise should ideally be 7.0 -10.0 mmol/L.
- If my glucose level before starting exercise is between 5 and 6.9 mmol/L, I will eat/drink _____grams of carbohydrate.
- If If my glucose level before starting exercise is less than 5.0 mmol/L, I will eat/drink _____ grams of carbohydrate.
- I wont start exercising if my ketones are **more than 1.0 mmol/L.**
- If exercising for longer than _____, I will need _____grams additional carbohydrate per hour for fuel.
- If eating within _____ minutes after the exercise has finished, my food bolus should be _____% of normal.
- I will keep the _____ function of my system on for _____ after completing exercise.

Check-list for Anaerobic or Mixed Exercise

Activities that involve strength, power, or stop-and-start movement (e.g. resistance training, netball, rugby, or interval workouts)

Types of anaerobic or mixed exercise I often do: _____
_____

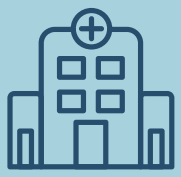
- I will turn on the _____ function of my system _____ hours before starting exercise.
- If eating within _____ of exercise, my food bolus should be _____% of normal.
- My glucose level before starting exercise should ideally be 5.0 -10.0 mmol/L.
- If If my glucose level before starting exercise is more than _____mmol/L, I will take a small correction dose of _____ before starting exercise.
- I wont start exercising if my ketones are more than 1.0 mmol/L
- If exercising for longer than _____, I will need _____grams additional carbohydrate per hour for fuel.
- If eating within _____ minutes after the exercise has finished, my food bolus should be _____% of normal.
- I will keep the _____ function of my system on for _____ after completing exercise.

Notes

Write down any extra notes, or individualised plans that are specific for your diabetes management.

Hospital and Medical Procedures

Managing the pump when you are in hospital or have a medical procedure



Hospital & Medical Procedures

Managing your pump in a hospital / medical setting

There are new national guidelines being developed to help hospital teams decide when it is safe for someone to remain on their insulin pump with Automated Insulin Delivery (AID) while in hospital. However, it's still common for people to be asked to pause their insulin pump during a hospital stay.

Not having access to your pump or CGM can feel unsettling and may feel like a loss of control. Being in hospital with type 1 diabetes can also be stressful - especially if you're not able to check your glucose, take insulin, or access food and hypo treatment as you usually would. If you're concerned about your diabetes care while in hospital, you can ask to be reviewed by the hospital diabetes team.

Reasons why you may need to come off your insulin pump and AID system

You may be asked to stop using your insulin pump and AID system if:

- You're too unwell to self-manage your pump (most hospital staff are not trained in insulin pump therapy)
- Your insulin needs are changing rapidly (e.g. during serious illness or major surgery)
- You require imaging like X-rays, CT, or MRI, which can damage your pump or CGM
- You're exposed to strong magnetic fields or equipment like diathermy
- Your body needs to be moved during a procedure/surgery, which could dislodge your infusion site or sensor or make it difficult to monitor
- For surgery, the anaesthetist may prefer to manage your glucose levels with an insulin infusion and regular capillary blood glucose checks during and after the procedure

What happens if you need to come off your pump

If your pump is stopped, the hospital team will manage your diabetes with either;

- an IV insulin infusion or
- multiple daily injections of insulin.

You will also likely have regular capillary blood glucose checks (finger-pricks), done by the nursing staff as there is limited research to show that CGM is accurate in a hospital setting.

Urgent or unplanned hospital stays

If you're admitted to hospital unexpectedly, it's more likely the medical team will recommend stopping your pump. Illness and dehydration can affect insulin needs and CGM accuracy, making insulin infusion or multiple daily injections of insulin safer while you are acutely unwell or recovering from surgery.

Planned hospital admissions and medical procedures

⚠️**Important reminder:** If you have an upcoming planned procedure, please contact your diabetes service to create a plan ahead of time. They can liaise with your surgical team to discuss whether it is safe to continue using your pump and AID system.

In some cases, you may only need to pause it for the duration of the procedure and can reconnect shortly after. In other situations, it may be safer to have an insulin infusion or use multiple daily injections of insulin for the entire hospital stay. The decision will depend on the procedure, your health status, the hospital's protocols and what the medical/surgical team are comfortable with.

When can I go back on my insulin pump and AID?

Before restarting your pump and AID system, the medical/surgical team needs to confirm that:

- You're well enough to self-manage
- Your insulin needs and hydration levels have stabilised

⚠️**Important reminder:** If you have had insulin via an injection or an IV infusion your team can support you with a plan to reconnect to your insulin pump and AID system safely. This will consider the insulin you have had via injection or IV infusion. They may suggest strategies such as using manual mode, reduced basal, exercise mode or a higher personal glucose target. Please discuss with your diabetes team the safest strategy for you.

Tips during hospital stays if you have to come off your insulin pump and AID

- Bring your blood glucose meter and keep this with you
- Ask if you can still use your CGM - this can increase your sense of safety/control
- Request hypo treatments and extra snacks to be kept at your bedside
- Ask the kitchen to carbohydrate count your meals (this may already be standard)
- Ask for support from the hospital diabetes team to plan a safe return to your insulin pump and AID system if you have had to come off your pump.

Notes

Write down any extra notes, or individualised plans that are specific for your diabetes management.

Getting the Most Out of Your AID System

(Automated Insulin Delivery)

Understanding AGP Reports

Understanding Ambulatory Glucose Profile reports

What is an Ambulatory Glucose Profile (AGP) report?

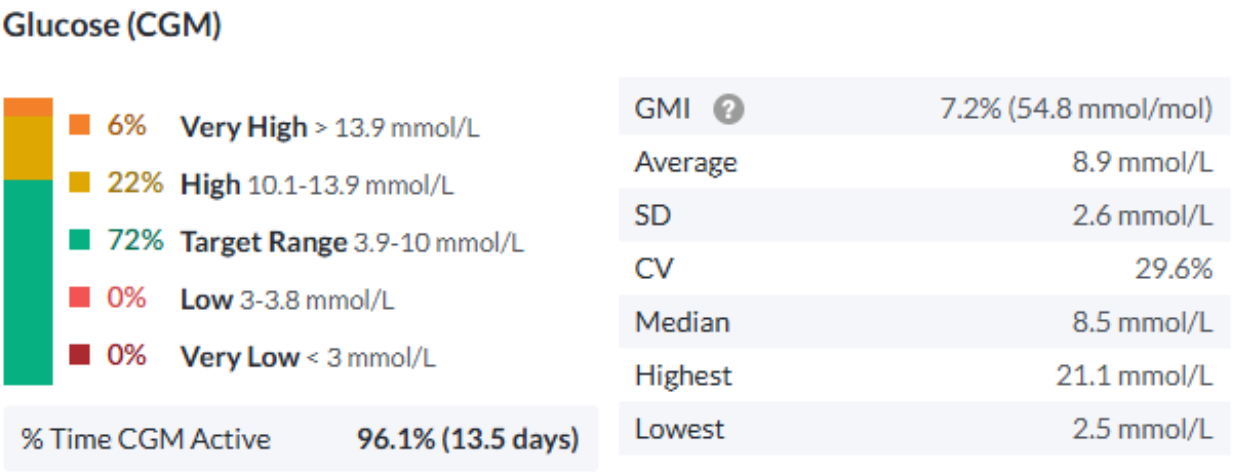
AGP reports provides a standardised visual summary of your glucose trends across different platforms like Glooko, Tandem t:source, Dexcom Clarity and Libreview. The AGP report shows data from your continuous glucose monitor (CGM) over a period of time that can be set between 7, 14, 30 and 90 days (or customised dates).

What does the AGP report show us?

The AGP report provides a summary of your glucose trends from your CGM over 24 hours and helps you and your team to spot trends rather than focusing on individual numbers or days. This can help with adjusting insulin pump / AID algorithm settings and identify issues with diabetes management strategies such as the timing of meal boluses or adjusting insulin delivery for different activities.

The AGP report has the following helpful information;

- Time In Range (TIR) data - time spent above, below or in range
- AGP graph - shows the glucose trends across the day
- Average glucose level - shown in mmol/L
- Standard deviation (SD) - how much your average glucose level tends to fluctuate
- Co-efficient Variation (CV) - a percentage of less than 36% means consistent trends
- Glucose Management Indicator (GMI) - an estimated HbA1c



Understanding Time In Range (TIR) data

You will see the percent (%) of time you spend with glucose levels within certain ranges. These are broken down to;

- Time Very High - above 13.9 mmol/L
- Time Above Range (TAR) - above 10.0 mmol/L
- Time In Range (TIR) - between 3.9 - 10.0 mmol/L
- Time Below Range (TBR) - below 3.9 mmol/L
- Time Very Low - below 3.0 mmol/L

International recommendations are that most people with diabetes should aim for the following goals for their time in range results;

Less than 5% above 13.9mmol/L (Time Very High)

Less than 25% of time above 10mmol/L (Time Above Range)

Greater than 70% of time between 3.9 - 10.0mmol/L (Time In Range)

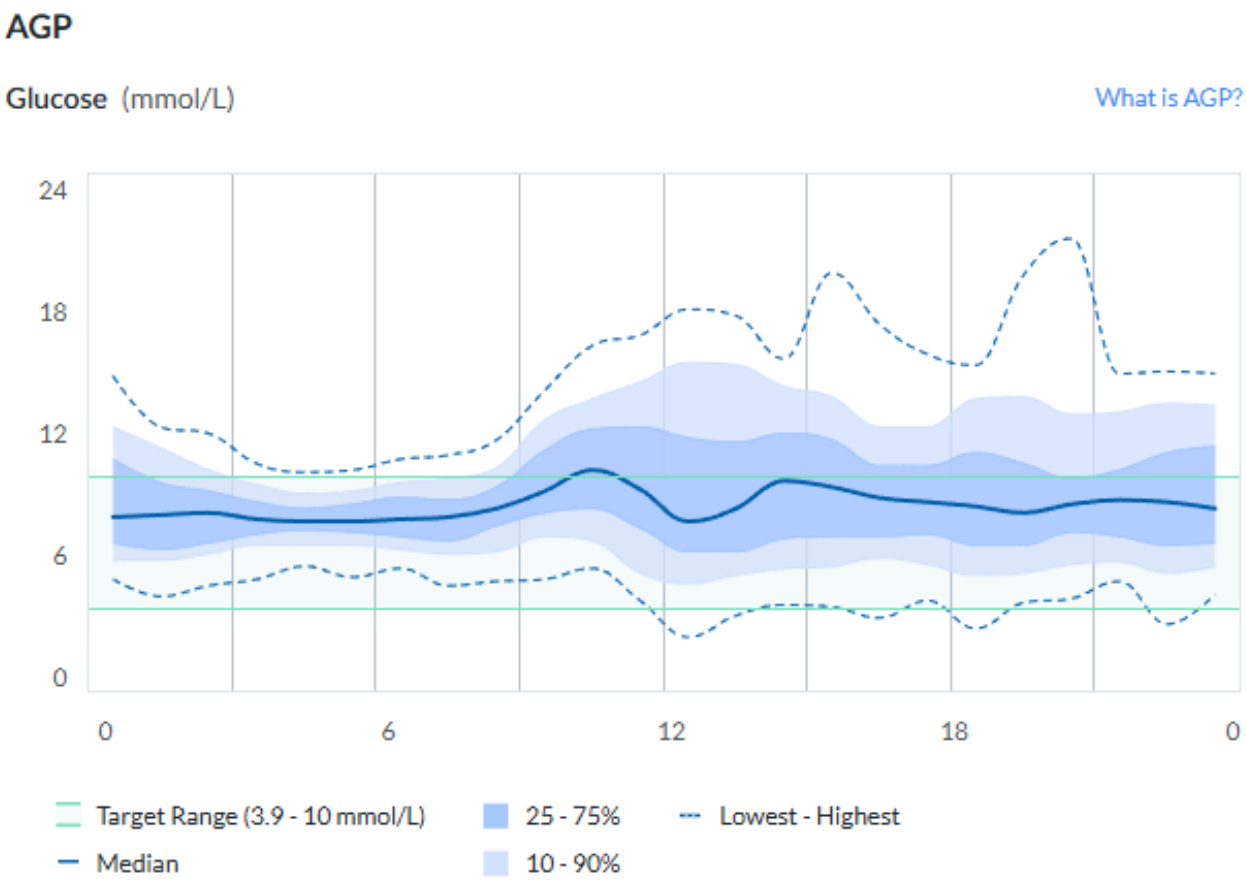
Less than 4% of time below 3.9 mmol/L (Time Below Range)
Less than 1% of time below 3.0 mmol/L (Time Very Low)

Some research also suggests aiming for greater than 50% of time in tight glucose range of 3.9 - 7.8mmol/L) but this isn't commonly recommended in practice yet.

Different people might need different goals for their time in range, like frail adults, pregnancy people or young children.

Usually the first two priorities to focus on are;

- Minimise the Time Below Range (TBR) less than 3.9 mmol/L (aim for less than 4%)
- Maximise Time In Range (TIR) between 3.9 - 10.0 mmol/L (aim for more than 70%)



Understanding the AGP graph

- The green bars show the standard target range of 3.9 to 10.0 mmol/L.
- The median (average) glucose is shown with the dark line
- The darker shaded area shows where your glucose levels tend to be the majority of the time (25th to 75th percentile)
- The lighter shaded area shows where your glucose levels tend to be some of the time (10th and 90th percentile
- The dotted lines show the highest and lowest glucose levels

The tighter the shaded areas are the more consistent your glucose trends are. If the shaded areas are quite wide at certain times of the day this means there is a lot of variation (fluctuations) in your glucose levels.

Understanding the Glycemic Management Indicator (GMI)

GMI estimates your HbA1c level based on CGM data over the time set in the report. International recommendations are to aim for a GMI of 7.0 % (53 mmol/mol) or less.

Checking your GMI over 60-90 days will give a result that closely matches your HbA1c blood test. You can convert your GMI to estimate HbA1c here.

Understanding Average Glucose

This is the average glucose for the entire report. If your average glucose is within the target range this is a good sign, however it is only a snapshot, and it is important to look at the other data like standard deviation and Co-efficient variation that tell you how much your glucose levels tend to go up and down from the average.

Understanding Standard Deviation (SD)

Standard deviation tells us how much your glucose levels go up and down on average. The smaller the standard devation, the more consistent your glucose levels are. The larger the standard deviation, the more variable your glucose levels are.

Understanding the Co-efficient variation (CV)

CV shows how much your glucose levels fluctuate (go up and down). It is expressed as a percentage:

- Lower CV (below 36%): Indicates stable glucose levels with fewer ups and downs
- Higher CV (above 36%): Suggests more variability with significant swings between high and low glucose levels

How CamAPS FX Works

The AID system with YpsoPump and Dexcom CGM

The CamAPS FX automated insulin delivery system includes the:

- mylife CamAPS FX app, downloaded onto a compatible Android phone
- YpsoPump insulin pump
- Freestyle Libre 3+ or Dexcom G6 CGM to automate insulin delivery

You can link your CamAPS FX app to Glooko (web-based diabetes management software) to allow data to be uploaded automatically when the phone is connected to the internet. You can share this information from Glooko with your diabetes team so they can help you make changes as necessary.

CamAPS FX automated insulin delivery:

- Has a customisable glucose target between 4.4 and 11.0 mmol/L that can be set differently at different times of the day. Consider a higher target glucose target when starting on CamAPS Fx if you have a high HbA1c, or diabetes-related complications (like retinopathy). Talk to your usual care team.
- Predicts your insulin requirements 2.5 to 4 hours in advance
- Automatically adjusts insulin delivery by setting the basal rate to zero, and adjusting insulin every 8-12 minutes based on CGM data and other factors
- Uses recent glucose levels and estimations of insulin and carbohydrates ‘on board’ to decide how much insulin to deliver
- Has a bolus calculator which can be used in both manual pump mode and ‘auto’ mode to give a bolus (no need to bolus from the pump!)

The CamAPS FX AID system is adaptive

- Learns from previous insulin delivery and glucose results and adapts insulin delivery to suit your insulin needs
- The system updates once a day around midnight. It will take 1-3 weeks to learn patterns in your daily routine

Getting the Most Out of Your YpsoPump with CamAPS FX

YpsoPump with CamAPS FX AID system

CCamAPS FX hardware:

- Change your pump site every 2-3 days
- Rotate pump and CGM sites - choose healthy skin without scars, irritation or lumps. Avoid areas that bend and belt lines.
- Use fresh insulin every 2-3 days
- Check insulin expiry and don't use insulin that has been open for more than 30 days
- Check your pump site and line/tubing regularly and troubleshoot any issues
- Change your Dexcom sensor every 10 days, or your Freestyle Libre 3+ sensor every 15 days.
- Your CGM and pump should be in 'line of sight' of each other to improve Bluetooth connectivity
- Ensure your phone is charged and replace the battery in your pump when alerted (bluetooth connection may be disrupted when battery is low)

CamAPS FX system management:

- Maximise your time in Auto-Mode - the more time the better!
  - Turn off Auto-mode if you have high ketones or if the sensor glucose is inaccurate and you have to calibrate your sensor
- Respond to alerts and alarms promptly - they're there for a reason!
- Tell the system about ALL of the carbohydrate you eat!
  - Bolus for all of your meals using the 'knife and fork' icon
  - For slowly absorbed meals - use the 'add meal' function to enter a proportion of carbohydrate from the meal (that has not already been bolused for) and 'select slowly absorbed meal'. This helps the system understand that a proportion of the meal will be slowly absorbed and it will increase insulin delivery in response.
  - For meals or snacks where you don't want to receive insulin (such as before exercise) use the 'add meal' function, enter the amount of carbohydrate and select 'Meal or snack' - this informs the system why your glucose levels are rising but does not deliver a bolus
  - Always enter carbohydrate taken to treat hypoglycaemia using the 'add meal' function to avoid extra insulin being delivered from the rapidly rising glucose

- Try to bolus for carbohydrates up to 10-15 minutes before eating
- Don't give extra manual corrections (unless you've had a set failure or been disconnected from the pump for a long time)
- Don't enter fake carbs into the app to give yourself a correction bolus
- Suspend your insulin delivery whenever you disconnect from the pump for more than 15 minutes

CamAPS FX settings management:

Ensure that there are basal rates programmed in the Ypsopump. Although not used in Auto-mode, these basal settings are very important if Auto-mode is switched off.

Use 'Boost' mode for situations when you are more insulin resistant (e.g. illness).

Use 'Ease-off' Mode for exercise or other situations where you are more sensitive to insulin/at risk of low blood glucose levels.

Use 'Boost' and 'Ease-off' modes appropriately when needed but not all the time. If using as part of regular glucose management then your insulin settings likely need adjusting. Remember the system is not 'learning' when you are using Boost or 'Ease-off' modes, try to avoid using these excessively when the algorithm is first learning your insulin requirements.

Check your weight is correct every 6-12 months in the settings menu of the app.

Revisit your Insulin to carbohydrate (I:C) ratios

- Are you often having low or high glucose levels after a meal? If so, your I:C ratios might need changing - talk to your usual diabetes team
- Review your glucose target/s regularly with your usual diabetes team

CamAPS FX glucose management:

- Avoid overtreating your hypos, as it can lead to very high glucose levels, which can lead to extra insulin delivery and potentially another hypo
- Always enter carbohydrate taken for hypoglycaemia treatment into the CamAPS FX system, to prevent the algorithm from delivering additional insulin for the rapidly rising glucose. Use the 'add meal' function > enter the amount of carbohydrate taken > select 'Hypoglycaemia treatment'
- Enter the accurate amount of carbohydrates into the system either via the bolus 'knife and fork' icon, or the 'add meal' function
- Don't deliberately overestimate or underestimate the carbs when using the bolus calculator

Notes

Write down any extra notes, or individualised plans that are specific for your diabetes management.

Notes

Write down any extra notes, or individualised plans that are specific for your diabetes management.

Thank you for reading Your Guide to Insulin Pump Therapy: Adult Edition

June 2025 Version 2.0

We hope this guide has helped you feel more informed and confident in managing your insulin pump and automated insulin delivery (AID) system.

This guide is updated regularly. For the latest version, contact us directly.

AOTEAROA DIABETES COLLECTIVE

Contact:

kiaora@aotearoadiabetescollective.org.nz

www.aotearoadiabetescollective.org.nz

@aotearoadiabetescollective