



# Considering Insulin Pump Therapy? Parent information



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# How do insulin pumps work?

An insulin pump is a battery powered device that constantly drip-feeds small amounts of insulin into the layer under the skin. The pump is connected by a tube (giving set) to the site which is attached to the skin and has a cannula (plastic or metal needle) that sits under the skin to give the insulin. This site needs to be changed every three days.

All pumps use rapid-acting insulin only (e.g. Novorapid or Humalog) which allows for quicker adjustments in insulin doses.

#### Basal insulin (background)

If there is no insulin in the body, our blood glucose levels (BGLs) would naturally rise higher and higher, even without food. To keep this stable, we need small amounts of insulin running in the background. Instead of using a long-acting insulin like Lantus, the pump drips in a small amount of fast-acting insulin every few seconds, day and night. This can be stronger or weaker (different rates) at different times of the day to match what the body needs.



## Bolus insulin (for food and corrections)

The pump can also give a larger amount of insulin (bolus) for food at meal times and for BGL corrections. To give a bolus of insulin, you need to tell the pump two things:

- 1) What your child's BGLs are (from the finger prick/sensor)
- 2) How much carbohydrate your child will eat



Using this information, the pump will calculate how much extra insulin to give your child on top of the background insulin already given.

## Hybrid closed-loop systems (HCL)

Recent updates to the pumps now let us use a hybrid closed-loop (HCL) system. This system involves a continuous glucose monitor (CGM) that can talk to the insulin pump and automatically adjust the insulin based on predicted BGLs. If your BGLs are high, it can increase the basal rate or give an extra correction bolus. If it predicts your BGLs will be low in the next 30 minutes, it will reduce or even turn off the insulin until your BGLs are stable.

This system will not do everything for you. You still need to tell the pump how much carbohydrate you are eating to make the most of the pump and to stop the pump always trying to catch up with the BGLs.



# Why would an insulin pump be good for my child?

Pros	Cons
Change needle site once every 3 days (less injections).	Risk of site infection (not common and easily avoided with regular cleaning and hygiene). Risk of skin irritation if sensitive.
More reliable and predictable insulin action compared to long/intermediate- acting insulin.	Greater risk of diabetes ketoacidosis (DKA) if insulin not given (e.g. pump turned off, disconnected or run out of insulin for 4-6 hrs).
Smaller doses can be delivered for pre- schoolers.	Must be connected all day.
Insulin can be given for all meals and snacks.	Need more accurate carb counting to make the most of the more accurate insulin delivery.
<ul> <li>Protective features:</li> <li>Calculations of insulin on board to prevent insulin "stacking"</li> <li>Auto adjustments to prevent highs/lows (if on HCL system)</li> <li>Alarms for highs and lows on the HCL system</li> </ul>	More visibility of diabetes due to being connected to a device. Alarm fatigue.
Less maths required to calculate insulin doses	Requires use of carb counting.
Greater flexibility with mealtimes, snacks, and daily activity.	Requires training to use.

Discuss these pros and cons with your child to see if pump therapy is something they would be interested in.

# Is my child eligible for a pump?

At the moment, PHARMAC funds insulin pumps and the matching sensors for people who meet the criteria detailed below:

- ] Has type 1 diabetes mellitus
- ] Has been evaluated by the multidisciplinary team for their suitability for insulin pump therapy
- Would benefit from automated insulin delivery

## How long can my child use the insulin pump for?

Insulin pumps are funded to use for four years. After this, your doctor can apply to get you a new pump for another four years so long as it is working for your child.

Sometimes the pump companies release new software that may be updated at any point.

## How much does an insulin pump cost?

Insulin pumps cost between \$8,500 to \$10,000 each however this is paid for by PHARMAC.

It is important to make sure your pump is insured so if there is any accidental damage you will receive help to fund a replacement. Talk to the company representative for a valuation letter to submit to your home contents insurer.

# Which pump is better for my child?

The two pumps funded by PHARMAC are the Tandem t:slim X2 (NZMS) and YpsoPump (Pharmaco). Below is a general comparison of the features of the pumps.

♦ 422 9.0 18 mmol/L 114 ₽ 3		260 u	OT B	07:35 14 Nov		100%
1.6 HRS		9.0 mmol/L 3 HRS	<ul> <li>22</li> <li>18</li> <li>14</li> <li>10</li> <li>6</li> </ul>		••••	\$
INSULIN ON BOARD 3.4 u BOLUS • • • X Control-R2: 0.80 u	Devcon	×	• 2	RD 3.4 u JS • • •	N ON BOAR BOLUS Control-IS	



Pump	Tandem T:slim	YpsoPump
Company	NZMS diabetes	Pharmaco
Sensor	Dexcom G7	Dexcom G6
	Dexcom G6 (for basal IQ only)	FreeStyle Libre 3+ (pending)
	Freestyle Libre 3+ (pending)	Dexcom G7 (pending)
Automated	Control-IQ- corrects highs and	MyLife CamAPS FX – corrects highs
system	predictive low glucose suspend.	and predictive low glucose suspend.
	Basal IQ – low glucose suspend only.	Self-learning based on your daily use.
	Allows more manual adjustments.	More automated, less adjustments.
Phone	No phone needed to use the pump.	Basic settings inside the pump.
requirement	The "brain" of the automated system	Automated system "brain" is in the
	is inside the pump itself.	phone that must be within 6 metres
	Phone needed for others to follow	of the pump to connect.
	and see real-time updates.	Android only – iPhone compatible by
	iPhone and some android phones.	mid-2025.
	Check company compatibility list.	Check company compatibility list.
Software	Dexcom App – to view sensor data	Mylife CamAPS App – to use pump
	Glooko – upload for medical team.	Glooko – auto-upload for medical
	You need a computer to use this (not	team. Requires wi-fi connection at
	a tablet/chromebook).	least once per month.
	Tandem t:slim mobile app and Tandem	
	source software to be released soon!	
Follow app	Dexcom follow app	MyLife CamAPS Companion App
Battery	Rechargeable – micro USB cable	AAA alkaline battery

For more information on the pumps, please visit the New Zealand based websites for each company or contact the company representatives to discuss further – details on back page.

## How do I get a funded pump?

#### Register your interest for a pump by speaking with your team.

• This does not guarantee a pump but will start the process of finding out more information.

Check with your child if this is something they are interested in too.

- Go through the pros and cons together (see page 3).
- Email the dietitian to book your advanced carb counting session
  - o <u>diabdiet@adhb.govt.nz</u>

Note: Even if you have been carbohydrate counting for years, it is still recommended to do this as a refresher and to make sure you have all the information you need before starting pump therapy. You will not get a pump without it.

Fill out the 3-day advanced carbohydrate counting record after you have met with the dietitian

- Provide as much information as possible.
- $\circ$   $\,$  Scan the form and email it back to the dietitian for review and sign off.

#### Choose which pump you would like to use

 Contact the insulin pump companies to find out more - see contacts at the end of this brochure.

#### Tell the pump coordinator which pump you have chosen

starshipinsulinpumps@adhb.govt.nz

Note: you will not be able to start on the pump instantly, wait times depend on demand but could be between 2-6 months.

#### Our nurse will offer you a pump preparation appointment

• Your nurse will go through any pre-education for a pump

#### Complete your pre-pump training

- The pump company representative will be in touch with videos and training to complete before the pump start.
- $\circ$   $\;$  This must be done before you can start the pump.

#### Pick up your pump from your pharmacy.

- Your diabetes doctor will send a prescription for the pump to your usual home pharmacy ~4 weeks before your pump start.
- $\circ$   $\;$  You need to bring this pump to the pump start session.
- Do not use the pump until the pump start day where your team will help you connect it and set it up to use.

# What training do I need before my child starts an insulin pump? Pre-pump training

The pump company representative will email through a list of online training you need to do before starting on the pump. These videos will explain how the pump works and what to expect from the insulin pump.

# Adjustments to make the day before

The nurse running the pump start will email you with adjustments to make to your child's insulin plan the night before the pump start. Often the long-acting insulin (Lantus) dose is adjusted to prevent problems when you start the pump. Give fast-acting insulin (Novorapid) as per normal.

# What happens at the pump start?

## Day 1 (8:30am – 12pm)

- In-person group session at either Greenlane or Pt Chevalier clinical centres (you will be advised of the location by the team ahead of time).
- Bring your child and up to 2 parents/guardians involved in day-to-day care (numbers are limited due to space).
- Bring the pump, consumables and insulin (Novorapid) with you
- The pump will be attached to your child at the pump start and your nurse will help to set up the initial insulin doses
- The company representative will show you how to use the pump and its features
- Your diabetes nurse will go through extra training such as sick day management and how to manage ketones when on a pump

## Day 2 (follow up zoom session)

Your nurse will set up a zoom session to follow up on how the pump is performing and make any adjustments as needed. This will take up to 2 hours.

# What follow up care should I expect?

- You will have an appointment with the diabetes nurse 1-month after the pump start, then your team will see you as normal in your 3-4 monthly clinic appointment.
- The special authority for insulin pump consumables e.g. lines, sites (not the pump itself) etc, will need to be renewed every 2 years.
- Try to see the dietitian every year to revise carbohydrate counting and for a general review. Dietitians can also provide education on additional bolus options for different meal types (e.g. high fat meals) once you are set up with the pump.
- The special authority for the pump will need to be renewed every 4 years and you will be eligible to receive a new or different pump with the latest funded hardware updates at this time.
- If you are needing extra CGMs, pump consumables or insulin between your diabetes clinic visits, please see your usual GP who can prescribe this for you.

If your young person is not managing well on a pump, e.g. disconnecting the pump often, the diabetes team may recommend they stop the pump and go back to injections. If you have concerns about this, please discuss with your team and we can make a plan together to best manage your young person's diabetes.

## Contact details

Pump companies

Tandem T:slim X2 (NZ Medical & Scientific)

Representative: Elandia Berning

Phone: 0508 634103

Mobile: 027 298 0301

Email: <u>eberning@nzms.co.nz</u>

Website: <u>https://www.nzms.co.nz/414/insulin-pump-therapy-for-type-1-diabetes-</u> tandem/

#### YpsoPump (Pharmaco)

Representative: Kathryn Yntema

Phone: (09) 377 3336

Mobile: 029 773 1359

Email: <u>kathryn.yntema@pharmaco.co.nz</u>

Website: www.pharmaco.co.nz

#### Starship pump coordinator

Non-urgent enquiries only (Mon – Fri)

Ask me questions about the pump start process, carbohydrate counting and pump

Email: <a href="mailto:starshipinsulinpumps@adhb.govt.nz">starshipinsulinpumps@adhb.govt.nz</a>

Diabetes nurse specialists Phone: (09) 631 0790 - Option 2

Email: diabnurse@adhb.govt.nz (Mon –Fri)

Diabetes dietitians Non-urgent enquiries only (Mon – Fri)

Email: diabdiet@adhb.govt.nz

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