



Royal Berkshire
NHS Foundation Trust

Everything you need to know about insulin pumps

Information for young people,
parents and carers

This leaflet outlines the different kinds of insulin pumps available, including advantages and disadvantages, so that you can decide which is the best option for you.

What do insulin pumps do?

An insulin pump is a small electronic device about the size of a smartphone. It delivers tiny amounts of insulin into the blood throughout the day and night. The pump contains a reservoir of insulin, which pumps through down an infusion set **all the time**. The insulin then passes through a tiny tube, called a cannula, into the body. The cannula is usually inserted just under the skin around the abdomen (tummy), thigh (leg) or buttock (bottom) and stays there for 2-3 days at a time.

The only insulin contained in a pump is rapid acting insulin (Novorapid). It is used for both background insulin (basal) and food / correction insulin (bolus). The basal rate is delivered by the pump through the infusion set into the body throughout the day.

At different times of the day, the body's basal insulin needs change, so one advantage of pump treatment is that different basal rates can be set at different times of day. Extra insulin can then be given for food at mealtimes and snacks (this is called a bolus) by using a special handset which communicates with the pump, or by pressing buttons on the pump itself.

Pumps can help to make everyday life easier to manage. They can also reduce the risk of low blood glucose levels (hypoglycaemia) and help to lower HbA1c (your average glucose level over 3 months).



However, a pump **will not manage your diabetes for you**.
A pump will not check your blood glucose level for you either.

What you need to be doing before you start on a pump

It is important to think about **why** you would like an insulin pump because to get the most out of it, you will need to do the following:

- check blood glucose levels 6-10 times a day
- count the carbohydrates in **everything** that you eat or drink
- give yourself insulin before **all meals and snacks**
- give yourself insulin **whenever your glucose levels are above target**
- know how to download your pump
- know how to look at your pump data to make changes to your doses
- continue to come to clinic every three months and contact the team at least once in between appointments

If you are using a pump, it is very important to **keep a close eye on high blood glucose levels** and to act quickly to prevent diabetic ketoacidosis (DKA). This is because the only type of insulin used in a pump is fast acting.

Which pump are you interested in?

Once you have started on a specific pump, you will need to keep it for four years before you can change.

Take time to think about the advantages and disadvantages of the different pumps to make sure that the one you choose fits your lifestyle – for example, it is usually easier for young children to use a pump with a handset, so that their parents can give them insulin remotely.

The following pages show the pumps we offer at the Royal Berkshire Hospital so you can compare the different features.

| Pump name (manufacturer) | 640G (Medtronic) | 780G (Medtronic) |
|--------------------------------|---|---|
| |  |  |
| Pump type | With tubing | With tubing |
| Linked CGM | Guardian 3 | Guardian Link 3 (essential) |
| CGM features | Predictive low glucose suspend (LGS) / LGS | Self adjusting basal / auto corrections / suspend before low / suspend on low |
| Cannula types | Angled Teflon 90° Teflon / steel | Angled Teflon 90° Teflon / steel |
| Auto / manual insertion | Both | Both |
| Disconnectable | Yes | Yes |
| Handset | No | No |
| Manual BG | Yes | No |
| Insulin vol (units) | 180-300 | 180-300 |
| Waterproof | 3.6m for 24 hours | 3.6m for 24 hours |
| Data review | Carelink | Carelink Minimed app |
| Not suitable if | | Under 7 years / without sensor funding Using under 8 units / day or over 250 units / day |
| Website | Type Medtronic 640G UK into your internet search / scan QR  | Type Medtronic 780G UK into your internet search / scan QR  |

| Pump name (manufacturer) | t:slim X2 (Tandem) | Omnipod (Insulet) |
|--------------------------------|--|--|
| |  |  |
| Pump type | With tubing | Patch |
| Linked CGM | Dexcom | No |
| CGM features | Predictive LGS | N/A |
| Cannula types | Angled Teflon / 90° Teflon / steel | Angled soft |
| Auto / manual insertion | Both | Auto |
| Disconnectable | Yes | No |
| Handset | No | Yes |
| Manual BG | Yes | Yes |
| Insulin volume (units) | 300 | 200 |
| Waterproof | 1m for 0.5 hour | 7.6m for 1 hour |
| Data review | Diasend | Diasend |
| Not suitable if | On under 10 units / day Under 6 years. | On under 20 units / day On over 100 units / day Under 5 years. |
| Website | Type T Slim X2 UK into your internet search / scan QR  | Type Omnipod UK into your internet search / scan QR  |

Advantages and disadvantages of using a pump

| Advantages of pumps over injections | Disadvantages of pumps over injections |
|--|--|
| <p>Fewer injections: No need to inject every time insulin is needed (However you will still need to check blood glucose levels, count carbohydrates in all food and drink, and give insulin through the pump).</p> | <p>Pump always attached: must be worn day and night, constant reminder of Diabetes can affect body image</p> |
| <p>Variable insulin delivery: Background insulin (basal rates) can be varied at different times of day Basal rates can be suspended or reduced temporarily Food insulin can be delivered over an extended time to help with very slow release meals</p> | <p>No long acting insulin stores: Higher risk of DKA if insulin delivery is interrupted / pump fails Pumps can only be disconnected for short periods (e.g. for swimming) Set changes needed : Infusion sets and cannulas need changing every 2-3 days</p> |
| <p>Small insulin doses: Pumps can deliver smaller doses (0.025 – 0.1 units) than pens (0.5 – 1 unit) – very helpful for young children</p> | <p>Infusion set problems: Air bubbles, tubing breaks, cannula kinks, improper priming can cause problems with insulin delivery</p> |
| <p>Integration with technology: Newer pumps can link with other technology, e.g. meters, continuous glucose monitors and diabetes management systems</p> | <p>More training needed: Using a pump is intensive – a lot of motivation and extra training is needed. Families need to commit a lot of time and effort to get the best out of pumps</p> |
| <p>More flexibility: During exercise / remote delivery of insulin for young children / more discreet way of delivering insulin</p> | |

For more advice about insulin pumps, please contact the Paediatric Diabetes team on the numbers below

Paediatric Diabetes Nurse

0118 322 8922

Paediatric Diabetes Dietitian

0118 322 8052

Notes

To find out more about our Trust visit www.royalberkshire.nhs.uk

Please ask if you need this information in another language or format.

Paediatric Diabetes Team

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