

meds & kit

The *balance* guide to all the diabetes meters, medications, insulins, pens and pumps available in the UK, 2011–2012





welcome...

...to this year's *balance* guide to diabetes meds and kit. Once again, we've revised all the information and collected the latest details of your diabetes 'kit' together in one place. Handy charts provide facts and figures for the products and treatments available in the UK today, while the accompanying text explains how to make the best use of it.

Diabetes can be a complicated condition to manage. Whether you want to buy a new insulin pen, or just keep your diabetes knowledge up-to-date, we hope you'll find what you need here.

Martin Cullen, Editor

A word from our sponsor

GlucoMen are the proud sponsors of the *balance Meds & Kit* guide, 2011–2012.

It is with great pleasure that GlucoMen introduce to you the next generation of meter. GlucoMen LX PLUS is the first no coding blood glucose and blood ketone meter, which is a huge forward step in technology to improve the lives of people with diabetes.

Accompanied by web-based education, GlucoMen's innovative new meter is designed to help prevent unnecessary hospitalisations due to diabetic ketoacidosis (DKA), which is a potentially life-threatening condition with thousands of preventable cases each year. To learn more about DKA, the dangers and how to prevent it, please turn to page 14.

More than 11 per cent of people with Type 1 diabetes have suffered from DKA in the past five years, a 10 per cent rise since 2003–2004, and it is the leading cause of death among children with diabetes, accounting for 50 per cent of such deaths.

GlucoMen LX PLUS uniquely eliminates meter coding errors, a common mistake that causes inaccurate test results. Accurate test results are crucial to ensure that patients inject insulin correctly and stay healthy.

GlucoMen's goal is to work closely with all diabetes specialist nurses and patients, and continue to do the right things to support the growing number of people who choose to rely on the GlucoMen systems to help manage their diabetes at home.

 Visit www.glucomen.co.uk to find out more.

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Editor's note

The product information in this guide has been provided by manufacturers, and we have made every effort to make sure it is accurate at the time of going to press. Because everyone's diabetes is different, Diabetes UK cannot recommend or endorse any products. If you have any questions about your individual diabetes care, please contact your healthcare team.

Testing your blood

Blood glucose monitoring can help you to maintain day-to-day control of your diabetes, detect hypoglycaemia (hypos – low blood glucose levels) and hyperglycaemia (hypers – high blood glucose levels), and assess your diabetes control during any illness.

Monitoring can also provide you and your healthcare team with the necessary information to alter treatment to help prevent any short- or long-term complications from developing.

Choosing a meter can be quite complex, as new products come onto the market all the time. Some manufacturers have produced computer software packages that help you look at trends in your blood glucose levels, and some meters store a record of pre- and post-meal averages (see chart on pages 4–5). Your healthcare team should help you to understand blood glucose monitoring and assist with choosing a suitable meter. Also, it's essential that you are taught how to carry out a test properly – poor technique may lead to incorrect results. This, in turn, could lead to inaccurate medication dosing, which could cause high or low blood glucose levels.

The strips used with meters are nearly always provided in batches of 50, but check with your healthcare team before choosing a meter. Telephone the manufacturers' helplines, listed on page 20, for more detailed information about specific products.

An increasing number of people with diabetes are reporting restriction or denial of blood glucose testing strips. Diabetes UK believes that decisions about blood glucose monitoring should be made on a case-by-case basis, and not by blanket removal of strips from prescriptions or local restrictive policies. Methods and frequency of testing should be jointly agreed between the person with diabetes and their healthcare team through care planning.

Choosing your meter

When discussing your meter requirements with your healthcare team, it may be useful to think about the following points:

- Convenience – consider the size, screen dimensions, weight and test time. You may find some meters suit you better than others.
- Warranty – most meters have one, but the length varies from two years to a lifetime.
- Additional features – virtually all devices can store a wide number of test strip results. Some meters also have an alarm clock option and can operate in a wider temperature range.



Finger pricking

- Make sure your hands are clean before you begin. Use water rather than wet wipes (wet wipes contain glycerine, which could alter the result).
- Avoid the forefinger and thumb, and prick the side of a finger, but not the middle, or too close to a nail, because this will really hurt.
- Use a different finger each time and a different part – this will hurt less.
- If you don't get much blood, hold your hand down towards the ground. This should make more blood flow to the fingers.
- Make sure your hands are warm – if they are really cold, it's hard to draw blood, and finger pricking will hurt more.

MANUFACTURER	METER	STRIP / TEST CASSETTE REQUIRED	SAMPLE VOLUME (µL)	TIME FOR TEST (SECS)	BLOOD GLUCOSE RANGE (MMOL/L)	CALIBRATION	BATTERY LIFE	NUMBER OF TESTS STORED WITH DATE AND TIME	LENGTH X WIDTH X DEPTH (CM)	
Abbott Diabetes Care	■ ■ ■ 1	Optium Xceed (Can test for ketones when used with the Optium B-ketone strip)	Optium Plus Test Strips	0.6	5	1.1–27.8	Each pack of strips has a calibrator (1-step calibration)	1,000 tests*	450 (7, 14 & 30-day average)	7.5 x 5.3 x 1.5
	■ ■ 2	FreeStyle Lite	FreeStyle Lite Test Strips	0.3	5 (average)	1.1–27.8	No coding required	500 tests*	400 (7, 14 & 30-day average)	7.4 x 4 x 1.7
	■ ■ 3	FreeStyle Freedom Lite	FreeStyle Lite Test Strips	0.3	5 (average)	1.1–27.8	No coding required	500 tests*	400 (7, 14 & 30-day average)	8.35 x 5 x 1.6
AgaMatrix Europe Ltd	■ ■ 4	WaveSense JAZZ (Free cable available for results download to Zero-Click results manager)	WaveSense JAZZ Test Strips	0.5	5 (minimum)	1.1–33.3	No coding required	1,000 tests*	1,865 (14, 30 & 90-day & pre- and post-meal average and standard deviation)	8.4 x 4.5 x 2
Arctic Medical	■ 5	IME-DC	IME-DC Test Strips	2.0	10	1.1–33.3	Each pack of test strips has a code key	1,000 tests*	100	8.8 x 6.2 x 2.2
Bayer Diabetes Care	■ ■ 6	Contour (Contour Link is also available, which transmits blood glucose results to compatible Medtronic diabetes devices)	Contour Test Strips	0.6	5	0.6–33.3	Automatic, no coding required	1,000 tests*	480 (7 & 14-day & pre- and post-meal average)	7.5 x 5.3 x 1.7
	■ ■ 7	Contour USB	Contour Test Strips	0.6	5	0.6–33.3	Automatic, no coding required	Rechargeable battery	2,000 (with built-in diabetes management software)	9.5 x 3 x 1.5
	■ 8	Didget	Contour Test Strips	0.6	5	1.1–33.3	Automatic, no coding required	1,000 tests*	480 (14-day & pre- and post-meal average)	9.5 x 7.5 x 1.5
	■ ■ 9	Breeze 2	Breeze 2 Test Strip Disc	1.0	5	0.6–33.3	Automatic, no coding required	1,000 tests*	420 (1, 7, 14 & 30-day average)	10.6 x 6.5 x 2.5
BBI Healthcare	■ ■ 10	Clever Chek	Clever Chek Test Strips	0.7	7	1.1–33.3	No coding required	1,000 tests – takes AAA replaceable batteries	450 (7, 14, 28, 60 & 90-day average)	9.5 x 5.5 x 1.8
	■ ■ 11	SensoCard Plus	SensoCard Test Strips	0.5	5	1.1–33.3	Simple plastic card swipe with each batch of strips	1,000 tests	500 (7, 14 & 28-day average)	8.8 x 5.4 x 1.5
LifeScan	■ ■ 12	OneTouch VerioPro	OneTouch Verio Test Strips	0.4	5	1.1–33.3	Automatic, no coding required	Minimum 6 months at 4 tests a day*	750 (7, 14, 30, 90-day average. Fasting, pre- and post-meal and bedtime tagging function)	9.1 x 5.6 x 2
	■ ■ 13	OneTouch Vita	OneTouch Vita Test Strips	1.0	5	1.1–33.3	Automatic, no coding required	1,095 tests*	500 (7, 14, 30-day & fasting, pre- and post-meal average)	9.5 x 6.5 x 2.25
	■ ■ 14	OneTouch UltraEasy	OneTouch Ultra Test Strips	1.0	5	1.1–33.3	Each vial has a code number	1,095 tests*	500	10.8 x 3.2 x 1.7
	■ ■ 15	OneTouch Ultra2	OneTouch Ultra Test Strips	1.0	5	1.1–33.3	Each vial has a code number	1,095 tests*	500 (7, 14, 30-day & pre- and post-meal average)	7.92 x 5.72 x 2.29
	■ ■ 16	OneTouch UltraSmart	OneTouch Ultra Test Strips	1.0	5	1.1–33.3	Each vial has a code number	6 months at 3 tests a day (1 test with back light)*	More than 3,000 (7, 14, 30, 60 & 90-day average)	9.4 x 5.8 x 2.1
Menarini Diagnostics	■ ■ 17	GlucoMen GM	Glucomen GM Sensors	0.5	7	0.6–33.3	No coding required	2,000 tests*	250 (14 & 30-day average)	8.0 x 6.5 x 1.3
	■ ■ 18	GlucoMen LX	GlucoMen LX Sensors	0.3	4	1.1–33.3	No coding required	1,000 tests*	400 (1, 7, 14 & 30-day average)	9.6 x 5.1 x 2
	■ ■ ■ 19	GlucoMen LX Plus	GlucoMen LX Sensors and GlucoMen LX Ketone Sensors	0.3	4	1.1–33	No coding required	1,000 tests*	400 (1, 7, 14 & 30-day average)	5.8 x 9.8 x 1.7
	■ ■ 20	GlucoMen Visio	GlucoMen Visio Sensors	0.8	10	1.1–33.3	Key 'n' Go Technology	1,000 tests*	250 & average	8 x 6.5 x 1.6
Nipro Diagnostics (UK) Ltd (formerly Home Diagnostics (UK) Ltd)	■ ■ 21	TrueOne	TrueOne Test Strips	1.0	5	1.1–33.3	No coding required	New meter every 50 tests	50	6 x 3 diameter
	■ 22	TrueTrack	TrueTrack Test Strips	1.0	10	1.1–33.3	Pot has coding chip	1,100 tests or 12 months*	365	8.9 x 5.5 x 1.7
	■ 23	TrueResult	TrueResult Test Strips	0.5	4	1.1–33.3	Automatic, no coding required	2,146 tests*	500 (7, 14 & 30-day average)	8.9 x 5.5 x 1.7
	■ 24	TrueResult Twist	TrueResult Test Strips	0.5	4	1.1–33.3	Automatic, no coding required	1,500 tests*	99	4.3 x 3.7 x 2.3
Roche Diabetes Care	■ ■ ■ 25	Accu-Chek Mobile	Mobile Test Cassette	0.3	5	0.6–33.3	No coding required	Minimum 500 tests*	500 (7, 14 & 30-day average)	12.3 x 6.6 x 2.8 (incl finger pricker)
	■ ■ ■ 26	Accu-Chek Compact Plus	Compact Test Strips	1.5	5	0.6–33.3	Barcode on test strip drum automatically codes meter	1,000 tests*	500 (7, 14 & 30-day average)	12.5 x 6.4 x 3.2 (incl finger pricker)
	■ ■ 27	Accu-Chek Aviva	Aviva Test Strips	0.6	5	0.6–33.3	Code key – no manual coding required	2,000 tests*	500 (7, 14 & 30-day average)	9.4 x 5.3 x 2.2
	■ ■ 28	Accu-Chek Aviva Nano	Aviva Test Strips	0.6	5	0.6–33.3	Code key – no manual coding required	1,000 tests*	500 (7, 14, 30, 90-day, & pre- and post-meal average)	6.9 x 4.3 x 2

■ Suitable for peritoneal dialysis ■ Suitable for alternative site testing ■ Includes integrated finger pricker ■ Can test for ketones

* Battery replaceable free of charge

 1 Optium Xceed Abbott Diabetes Care	 2 FreeStyle Lite Abbott Diabetes Care	 3 FreeStyle Freedom Lite Abbott Diabetes Care	 4 WaveSense JAZZ AgaMatrix Europe Ltd	 5 IME-DC Arctic Medical	 6 Contour Bayer Diabetes Care	 7 Contour USB Bayer Diabetes Care
 8 Didget Bayer Diabetes Care	 9 Breeze 2 Bayer Diabetes Care	 10 Clever Chek BBI Healthcare	 11 SensoCard Plus BBI Healthcare	 12 OneTouch VerioPro LifeScan	 13 OneTouch Vita LifeScan	 14 OneTouch UltraEasy LifeScan
 15 OneTouch Ultra2 LifeScan	 16 OneTouch UltraSmart LifeScan	 17 GlucoMen GM Menarini Diagnostics	 18 GlucoMen LX Menarini Diagnostics	 19 GlucoMen LX Plus Menarini Diagnostics	 20 GlucoMen Visio Menarini Diagnostics	 21 TrueOne Nipro Diagnostics (UK) Ltd
 22 TrueTrack Nipro Diagnostics (UK) Ltd	 23 TrueResult Nipro Diagnostics (UK) Ltd	 24 TrueResult Twist Nipro Diagnostics (UK) Ltd	 25 Accu-Chek Mobile Roche Diabetes Care	 26 Accu-Chek Compact Plus Roche Diabetes Care	 27 Accu-Chek Aviva Roche Diabetes Care	 28 Accu-Chek Aviva Nano Roche Diabetes Care

Taking medication

Many people with Type 2 diabetes take medication to help control their blood glucose levels. These medications (taken in tablet, oral solution or injection form) are not the same as insulin

How do they work?

Diabetes medications work by lowering blood glucose levels in a number of different ways. This helps reduce the risk of long-term complications of diabetes and if you're having symptoms of the condition they will relieve them.

If you are prescribed medication, it doesn't mean that your diabetes has got worse – just that diet and activity alone aren't effective enough to control the condition. And if you are on tablets or injections, it's still important to follow a healthy diet and be physically active – medication is not a substitute.

Side effects

Diabetes medications have some potential side effects, so, as with any other kind of medication, you will need to discuss the treatment with your healthcare team and read the patient information leaflet that comes with the medication – regardless of whether you're taking tablets on their own or with any other form of medication.

Will medication work for ever?

Medication cannot cure diabetes, and most people prescribed medication have to take it for the rest of their lives. It is vital to take it as prescribed and inform your doctor if you can't manage it or it is not agreeing with you.

Type 2 diabetes is a progressive condition, and over time you may need more help to keep your blood glucose levels well controlled. The first sign of this may be consistently higher readings, so your GP may recommend increasing the dose of your medication or taking more than one kind. Eventually, if your glucose levels remain too high, you may be moved onto insulin.

All in the name

Most medications have two different names – the generic (or proper) name and the trade (or brand) name, which is given by the company that makes it. The important one to remember is the generic name. Sometimes your medication might look different from your last supply, but this may be because it has come from a different supplier. However, if you're ever unsure about whether you have the right medication, check with your pharmacist.

Types of medication

There are several different types of diabetes medication:

- biguanides
- sulphonylureas
- prandial glucose regulators
- alpha-glucosidase inhibitors
- thiazolidinediones (glitazones)
- incretin mimetics
- DPP-4 inhibitors
- combined formulation medications

These drug 'families' may contain more than one type of medication. Some tablets contain more than one medication from different families.

i [Type 2 Diabetes Medication is available to download from www.diabetes.org.uk/shop.](http://www.diabetes.org.uk/shop)



CLASS	GENERIC NAME	TRADE NAME	DOSAGE SIZE/STRENGTH	MIN–MAX DAILY DOSE	WHEN TAKEN	TIMES PER DAY
Biguanides						
	Metformin	Glucophage	500mg, 850mg	500–3,000mg	With or after food	2–3 times
		Glucophage Powder	500mg, 1,000mg	500–3,000mg	With or after food, mixed with water	2–3 times
		Metformin Oral Solution	500mg per 5ml	500–3,000mg	During or after meals	2–3 times
	Metformin prolonged release	Glucophage SR	500mg, 750mg, 1,000mg	500–2,000mg	With or after evening meal if once. Breakfast and evening meal if twice. Swallow whole	Once (dose can be split if not tolerated or glycaemic control still inadequate)
Sulphonylureas						
	Glibenclamide	Glibenclamide	2.5mg, 5mg	2.5–15mg	With or immediately after breakfast or first main meal of the day	Once
	Gliclazide	Diamicon	80mg	40–320mg	Take with water before a meal	1–2 times
		Diamicon MR	30mg	30–120mg	Take with water at breakfast. Swallow whole	Once
	Glimepiride	Amaryl	1mg, 2mg, 3mg, 4mg	1–6mg	Shortly before or with first main meal	Once
	Glipizide	Minodiab	5mg	5–20mg	Before food	1–2 times
	Tolbutamide	Tolbutamide	500mg	500–2,000mg	With or immediately after food	1–3 times
Prandial glucose regulators						
	Nateglinide	Starlix	60mg, 120mg, 180mg	60–540mg	Up to 30 minutes before meals	Up to 3 times
	Repaglinide	Prandin	0.5mg, 1mg, 2mg	0.5–16mg	Usually within 15 minutes prior to main meals, but up to 30 minutes before	Up to 4 times
Alpha-glucosidase inhibitors						
	Acarbose	Glucobay	50mg, 100mg	50–600mg	Chewed with first mouthful of food or swallowed whole with water directly before	3 times
Thiazolidinediones ('Glitazones')						
	Pioglitazone	Actos	15mg, 30mg, 45mg	15–45mg alone, or in dual or triple therapy, or with insulin	With or without food	Once
Incretin mimetics						
	Exenatide	Byetta	5mcg, 10mcg (injection pens)	10–20mcg	Within 60 minutes prior to the two main meals of the day, at least six hours apart	Twice
	Liraglutide	Victoza	0.6mg, 1.2mg, 1.8mg (injection pens)	0.6mg starting dose, then 1.2mg, then 1.8mg	Once daily, at any time, independent of meals, around same time of day	Once
DPP-4 inhibitors						
	Sitagliptin	Januvia	100mg	100mg alone, or in dual or triple therapy, or with insulin	Can be taken with or without food	Once
	Vildagliptin	Galvus	50mg	50mg when taken with a sulphonylurea; 50mg twice with a glitazone or metformin	Can be taken with or without food	Once with a sulphonylurea; twice with a glitazone or or metformin
	Saxagliptin	Onglyza	5mg	5mg – licensed for dual therapy use only	With or without food at any time of day	Once
Combined formulation medications						
	Pioglitazone + Metformin	Competact	15mg/850mg	One 15mg/850mg tablet twice	With or just after food	Twice
	Vildagliptin + Metformin	Eucreas	50mg/850mg, 50mg/1,000mg	50mg/850mg – 50mg/1,000mg twice	With or just after food	Twice
	Sitagliptin + Metformin	Janumet	50mg/1,000mg	50mg/1,000mg twice	With food	Twice

Can you help a friend or relative with diabetes?

Introduce your friend or family to **Supporting Membership** and they'll receive:

- Balance magazine 5 times a year
- Access to EXCLUSIVE member-only web pages
- A wide choice of publications and supplements
- A network of contacts and support
- 10 per cent discount on buildings and contents insurance
- A FREE 75th anniversary commemorative cup and saucer

What's more, **NO FIXED FEE** for joining!

Ask your friend or relative to call **0845 123 2399** quoting 'MGM1'

FREE GIFT

If they mention your name, you'll also get a 75th anniversary commemorative free gift!



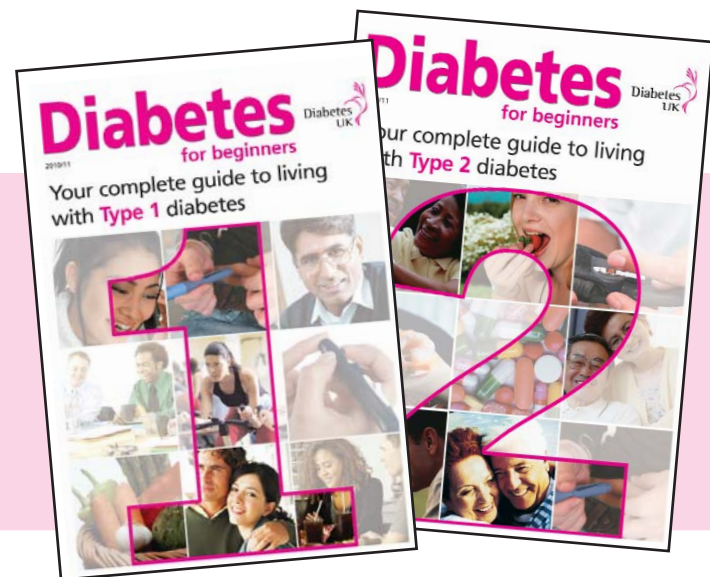
Diabetes UK



Diabetes for Beginners Type 1 and Type 2

If you have recently been diagnosed with diabetes or would like a refresher, then this is for you...

Find out all you need to know about living with Type 1 or Type 2 diabetes – order *Diabetes for Beginners Type 1* (6015) or *Diabetes for Beginners Type 2* (6014) for £4+p&p each, by calling **0800 585 088** or visiting www.diabetes.org.uk/shop



Injecting insulin

Insulin is the hormone needed to let glucose – the body's main fuel – enter cells and provide energy. In this way it helps to keep blood glucose as close to target levels as possible.

Insulin injections are for people with Type 1 diabetes, who are unable to produce any insulin themselves. It is also a treatment option for people with Type 2 whose diabetes cannot be controlled adequately with other glucose-lowering medications, diet and physical activity. Insulin cannot be taken as a tablet – the stomach would destroy it before it had a chance to work. Therefore, it is given as an injection or via a pump.

Diabetes UK's recommended blood glucose targets

Group	Before meals	Two hours after meals
Children with Type 1	4–8mmol/l	Less than 10mmol/l
Adults with Type 1	4–7mmol/l	Less than 9mmol/l
Adults with Type 2	4–7mmol/l	Less than 8.5mmol/l

However, your healthcare teams may agree individual targets with you.

Side effects

When people first start insulin treatment, they may occasionally experience some sensitivity around the injection site, such as swelling or itching. The problem may be caused by your injection technique, so discuss this with your healthcare team. The itching usually disappears after a few weeks of injecting. However, although it is extremely unusual to be allergic to insulin, some people can, very occasionally, have a reaction to one of the added components in the insulin, such as a preservative. You can usually overcome this by using another insulin that does not contain that particular type of preservative.

Hypoglycaemia (low blood glucose) can occur for a number of reasons: injecting too much insulin, not eating enough carbohydrate, unplanned or strenuous activity, too much alcohol or alcohol without food, or even because the weather is hot – and, sometimes, there just is no obvious cause.

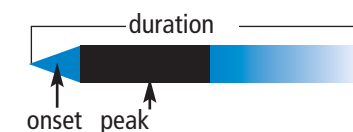
i *Treating Your Diabetes with Insulin* (8032, £2+p&p) and *Living with Diabetes – Treated with Insulin* (3008, 15.99+p&p) are available from Diabetes UK on 0800 585 088. Please quote BT002 when calling. You can download the 'Hypoglycaemia' information sheet from www.diabetes.org.uk/shop.

Storing insulin

- Do keep the insulin you are currently using in a cool, dry place (below 25°C / 77°F).
- Do keep in the fridge at least one spare vial or cartridge of each type of insulin you take.
- Do discard any insulin that has been out of the fridge for 28 days or more.
- Don't place insulin in, or close to, the freezer compartment. Insulin should not be used if it has frozen.
- Don't expose vials, cartridges or pre-filled pens to sunlight or high temperatures (eg near a cooker) or on top of electrical equipment (such as a television or computer).
- Don't keep insulin vials, cartridges or pre-filled pens in the car during hot weather.
- Don't use insulin if it has expired (check the pack for the expiry date).



NAME	MANUFACTURER	SOURCE	DELIVERY SYSTEM	TAKEN	ONSET, PEAK AND DURATION
Rapid-acting analogue					0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36
NovoRapid	Novo Nordisk	Analogue	Vial, cartridge, prefilled pen	Just before / with / just after food	
Humalog	Lilly	Analogue	Vial, cartridge, prefilled pen	Just before / with / just after food	
Apidra	Sanofi-Aventis	Analogue	Vial, cartridge (two types), prefilled pen (two types)	0–15 mins before, or soon after, a meal	
Short-acting / neutral					
Actrapid	Novo Nordisk	Human	Vial	30 mins before food	
Humulin S	Lilly	Human	Vial, cartridge	20–45 mins before food	
Hypurin Bovine Neutral	Wockhardt UK	Bovine	Vial, cartridge	30 mins before food	
Hypurin Porcine Neutral	Wockhardt UK	Porcine	Vial, cartridge	30 mins before food	
Insuman Rapid	Sanofi-Aventis	Human	Cartridge, prefilled pen	15–20 mins before food	
Medium and long-acting					
Insulatard	Novo Nordisk	Human	Vial, cartridge, prefilled insulin doser	As advised by your healthcare team	
Humulin I	Lilly	Human	Vial, cartridge, prefilled pen	About 30 mins before food or bed	
Hypurin Bovine Isophane	Wockhardt UK	Bovine	Vial, cartridge	As advised by your healthcare team	
Hypurin Bovine Lente	Wockhardt UK	Bovine	Vial	As advised by your healthcare team	
Hypurin Bovine PZI	Wockhardt UK	Bovine	Vial	As advised by your healthcare team	
Hypurin Porcine Isophane	Wockhardt UK	Porcine	Vial, cartridge	As advised by your healthcare team	
Insuman Basal	Sanofi-Aventis	Human	Vial, cartridge, prefilled pen	45–60 mins before food	
Mixed					
Humulin M3	Lilly	Human	Vial, cartridge, prefilled pen	20–45 mins before food	
Hypurin Porcine 30/70 Mix	Wockhardt UK	Porcine	Vial, cartridge	As advised by your healthcare team	
Insuman Comb 15	Sanofi-Aventis	Human	Cartridge, prefilled pen	30–45 mins before food	
Insuman Comb 25	Sanofi-Aventis	Human	Vial, cartridge, prefilled pen (two types)	30–45 mins before food	
Insuman Comb 50	Sanofi-Aventis	Human	Cartridge, prefilled pen	20–30 mins before food	
Analogue mixture					
Humalog Mix 25	Lilly	Analogue	Vial, cartridge, prefilled pen	Just before / with / just after food	
Humalog Mix 50	Lilly	Analogue	Cartridge, prefilled pen	Just before / with / just after food	
NovoMix 30	Novo Nordisk	Analogue	Cartridge, prefilled pen	Just before / with / just after food	
Long-acting analogue					
Lantus	Sanofi-Aventis	Analogue	Vial, cartridge (two types), prefilled pen (two types)	Once a day, any time (but at same time each day)	
Levemir	Novo Nordisk	Analogue	Cartridge, prefilled pen, prefilled insulin doser	Once or twice daily (at same time each day)	



Times are approximate and may vary from person to person. This is a guide only.

Diabetic ketoacidosis (DKA)

Diabetic ketoacidosis (DKA) is a dangerous and potentially life-threatening condition with thousands of preventable cases each year.

DKA most commonly happens in people with Type 1 diabetes, although it occasionally occurs in people with insulin-treated Type 2 diabetes. DKA happens when there is persistently high glucose in the blood and a lack of insulin.

There are two main stages of DKA:

Stage one

As the amount of glucose in the blood rises, the body tries to remove the excess by passing it out in the urine. This leads to dehydration, as the body moves water from cells to the bloodstream to dilute the glucose. As this happens, levels of sodium and potassium (called electrolytes) are affected too. When these are unbalanced, you become even more poorly.

Even though there is a lot of glucose in the blood, the lack of insulin means it can't get to the cells where it is needed for energy. The cells send out emergency signals and the body breaks down fat stores as replacement energy. As fat is broken down, poisonous acidic chemicals, called ketones, are released into the bloodstream.

Potential symptoms of stage one

- blood glucose levels higher than 13.9mmol/l
- going to the toilet a lot to pass urine
- thirst
- tiredness
- small amounts of ketones in the blood (0.6–1.5mmol/l) or urine.

If DKA is detected at stage one, with only small amounts of ketones in the body, it may be possible to bring things back to normal by taking extra short-acting insulin – your healthcare team will tell you how.

If you have Type 1 diabetes and you are pregnant, it is even more important DKA that does not progress, so seek medical advice straight away. You will probably be admitted to hospital to ensure the safety of both yourself and your baby.

Stage two

As DKA progresses into its second stage, the amount of ketones in your blood rises. Ketones are poisonous and the body tries to remove them in the urine and on the breath. Higher levels of ketones in the blood can make you feel sick and can lead to vomiting. If untreated, high levels of ketones, dehydration and an imbalance of other chemicals in the blood can lead to unconsciousness and can eventually be fatal.

Potential symptoms of stage two

- moderate to large amounts of ketones in the blood (over 1.5mmol/l) or urine
- nausea and vomiting
- deep rapid breathing
- breath smelling of pear drops
- drowsiness
- unconsciousness.

If any of this happens, you will need immediate medical attention – usually being given fluids intravenously, and extra insulin to bring your blood glucose levels back under control. DKA can take up to 24 hours to develop in adults but develops faster in children.

It is important to get medical advice as soon as you think you may be developing DKA. Remember, at this stage DKA is a medical emergency and you should not try to treat it yourself.

Preventing DKA – blood ketone testing

If you have Type 1 diabetes, it is important to test for ketones if your blood glucose levels are persistently over 13.9mmol/l, or when you are ill. Some people do this by dipping a test strip into their urine, but others test for blood ketones using a meter.

What are the pros of testing for blood ketones?

- It gives you a here-and-now result, which means you can take action to bring your diabetes under control. The ketones in your urine were in your blood several hours ago.
- It provides a numerical result rather than a colour comparison, which can be more accurate and

How to interpret your blood ketone results

<0.6

Under 0.6mmol/l – normal; consider rechecking blood ketone levels in 1–2 hours if blood glucose remains elevated, above 13.9mmol/l.

0.6–1.5

0.6–1.5mmol/l – indicates need for extra insulin. It is important to call, or follow the rules provided by, your diabetes healthcare team and continue to check your blood glucose and blood ketone levels in 1–2 hours.

>1.5

Over 1.5mmol/l – indicates risk of diabetic ketoacidosis. Call your healthcare team immediately.

Illness

Some types of illness can affect your diabetes control by raising your blood glucose levels. When you are ill, your body reacts by releasing more glucose into the bloodstream and increases insulin resistance, stopping it from working properly. This happens even if you are eating less food than usual or vomiting.

In someone without diabetes who is ill, the body simply releases more insulin to deal with the higher levels of glucose in the blood, bringing them back within the normal limits. However, in people with diabetes this is not done, increasing the risk of developing DKA.

When you're ill

Here are the basics to remember when you're poorly:

- Test blood glucose levels more often – at least four times a day – and test during the night as well.
- If blood glucose levels are 13.9mmol/l or more, test for blood ketones.
- Continue to take insulin or diabetes medication and adjust the dose in response to test results if you have been taught to do so.
- Drink plenty of sugar-free drinks.
- If being sick, take carbohydrate-containing drinks such as milk and other milky drinks, fruit juice or sugary drinks such as Lucozade, ordinary cola or lemonade.
- Eat little and often, taking carbohydrate containing drinks, as above, and snacks such as toast, biscuits and cereal.
- Contact your doctor or healthcare team if any of the following apply: blood glucose levels are continuously high; ketones in blood or urine; vomiting; diarrhoea; or if you are unsure what to do.

easier to read. Blood testing, unlike urine testing, is unaffected by fluid intake.

- If you find urine testing distasteful, blood testing is a quick and easy alternative.

How can I test for blood ketones?

In the same way as testing for blood glucose. GlucoMen LX PLUS is the only no coding blood glucose and blood ketone meter available. Only a tiny sample is needed and your accurate results are displayed in seconds. The other meter available is the Optium Xceed but this requires coding.

Who is it most useful for?

- people with Type 1 diabetes
- children, who are more likely to develop DKA quickly and who it might be difficult to collect urine from
- insulin pumpers, as DKA can develop rapidly if the pump fails
- pregnant women, who can also develop DKA quickly, which can seriously affect both their own health and that of their baby.

Blood ketone testing doesn't replace blood glucose testing – it can be used alongside it. If you think it could help you manage your diabetes better, talk to your healthcare team.

i For more on DKA, visit www.diabetes.org.uk/dka.
 • If you would like to know more about testing blood glucose and blood ketones, visit www.glucomen.co.uk, call GlucoMen on 0800 243667 or email myglucomen@menarinidiag.co.uk. You may also be able to receive a GlucoMen LX PLUS free of charge.

Living with pumps

Insulin pump therapy, also known as continuous subcutaneous insulin infusion (CSII), can provide an alternative to multiple injections. It can also help to improve overall control of diabetes and therefore create a better quality of life for some people

How does pump therapy work?

It involves the use of an insulin pump, which delivers a varied dose of short-acting insulin continually during the day and night at a rate that is pre-set according to your needs (known as a basal rate). Then, usually when you eat, you can give yourself extra insulin (known as a bolus dose) at the touch of a button on the pump. The pump has a reservoir holding two to three days' supply of insulin (although this can depend on your individual requirements). This insulin is delivered through an infusion set – a fine tube that runs from the pump to a cannula, which is a very thin and flexible plastic tube that is inserted under the skin, usually of the abdomen, via a needle.

The cannula can be left in place for two to three days before needing to be replaced and repositioned somewhere else on your body. The pump is battery operated and indicates if power is low.

A registered dietitian will teach you how to work out the carbohydrate content in your meals and snacks so that you are able to give yourself the appropriate bolus dose. A bolus can also be given if your blood glucose levels have risen too high. The flexibility of being able to give yourself a bolus dose when needed helps you to achieve good control of your blood glucose levels. Using a pump also decreases the risk of hypos (low blood glucose levels).

Can I use a pump?

In theory, anyone can use a pump, although in practice NICE guidance will usually be followed (see right). If you and your healthcare team decide pump therapy is the right treatment for you – and you meet the criteria set by NICE – funding for the pump and



disposables (tubing and needles) may come from the NHS. If you don't meet the criteria, you will have to pay for everything – except the insulin – yourself. Pumps cost between £2,000 and £3,000, and usually last around four years. The disposables cost about £1,700 per year.

How will I know how to use a pump?

Your healthcare team should give you relevant training when you start to use a pump, and it's important to receive ongoing support. Many more diabetes teams will now have the expertise to provide the support you'll need. Pump companies may also be able to provide insulin-pump training for you and your healthcare team.

How can I find out more?

There are support groups for people using or wanting to use a pump:

- Insulin Pumpers is a website run by volunteers to help support people with diabetes, and has an email discussion group – visit www.insulin-pumpers.org.uk.
- INPUT is an independent patient-led support group for people with diabetes using insulin pumps, run by pump users and their families – call 01590 677911, email input.diabetes@googlegmail.com or visit www.input.me.uk.

Pump pros and cons

Advantages

- Fewer injections – the needle for the cannula is only replaced two to three times a week.
- Your lifestyle can be more flexible – you don't have to plan so carefully or eat at set times.
- You may be able to reduce your total dose of insulin as your diabetes control improves.
- It's easy to use – once the pump is set up, you can give yourself a bolus dose at the push of a button.

Disadvantages

- You need to test your blood glucose levels more frequently – because the insulin is short-acting, it is important to make sure you are always aware of your insulin needs.
- You may forget your bolus doses – this is usually just a problem while you get used to everything.
- Infection may develop at the insertion site.
- You may get scarring at the insertion site, which means changing the infusion set more often.

Continuous blood glucose monitoring

Continuous blood glucose monitors (CGMs) offer another way of helping you to obtain good blood glucose control. CGMs show your blood glucose levels over 24 hours, so they can be useful in:

- determining where hypo- and hyperglycaemia occur, especially if you have an HbA1c level within target range
- revealing high blood glucose levels after meals, and hypoglycaemia at night when you are sleeping
- showing how blood glucose levels react to insulin, physical activity, food and different medication types and doses
- improving blood glucose control in pregnant women
- helping to identify night-time, late-onset hypoglycaemia, after periods of intense physical activity.

Some CGM systems work alongside the pump, wirelessly transmitting the readings to it. Others require downloading after a few days, supplying you with retrospective results.



NICE guidelines

The National Institute for Health and Clinical Excellence (NICE) has recommended that insulin pump therapy be available to those with Type 1 diabetes over the age of 12, where multiple-dose insulin (MDI) therapy has failed, including using insulin glargine where appropriate, and the individual concerned is willing and able to use insulin pump therapy effectively. Children under the age of 12 may not need to have a trial of MDI before starting on a pump.

PUMP	SIZE (CM)	WEIGHT	SCREEN SIZE (MM ²)	COLOURS	BASAL INCREMENT	TOTAL BASALS	BASAL PROFILES	MEMORY	BATTERY LIFE	WATERPROOF?	MANUFACTURER'S DESCRIPTION
Dana R Advanced Therapeutics (UK) Ltd 	7.5x4.5x1.9	63g (2.2oz) including battery	Pump: 595 Remote: 595	Pink, green, black, grey, white	0.01 u/hr or 0.1 u/hr	24/day	4	500 bolus, 100 prime, 200 daily totals 500 carbohydrate and 500 blood glucose readings.	6–8 weeks	Watertight (international protection rating IPX8)	Small remote control with screen and integrated blood glucose monitor (wireless communication with pump); meal bolus calculator with ability to set different carb:insulin ratios depending on time of day; tracks insulin on board; audible reminder to check blood glucose after meal; all data downloadable to PC. Four insulin sensitivity factors; several alarms; bolus frequency restriction; 3ml (300u cartridge); 23 languages; doctor mode. 4-year guarantee.
Animas 2020 Animas 	7.6x5.1x2.2	92g (3.2oz) including battery and cartridge	992	Pink, green, silver, blue, black	0.025u	12/day	4	Last 500 bolus, 60 prime, 120 daily totals, 30 alarms, 30 suspends and 270 basal records.	Uses one AA lithium battery, lasting 5–7 weeks	Waterproof to 12ft for up to 24 hours	Bolus calculator with customisable food database; high-contrast flat-panel colour screen (viewable in dark); tracks insulin on board to help prevent hypos through 'stacking'; up to 12 personalised settings for blood glucose targets; 12 carb:insulin ratios and 12 insulin sensitivity factors; customisable basal programs; personalised audio notification; temporary basal rate; resistant to static electricity. 4-year guarantee.
Paradigm Veo 554 & 754 Medtronic 	Veo 554 8.3x5.1x2 Veo 754 9.4x5.1x2.1	95g (3.4oz) including battery 102g (3.6oz) including battery	900	Blue, silver, pink, purple, black	0.025u	48/day	3	Glucose level statistics (based on finger prick and continuous glucose monitoring readings). 90 days' memory with 31 days' visible on pump screen. Manages basal and bolus insulin delivery, blood glucose data and food intake with averages.	3 weeks	Watertight to 1m for up to 30 minutes	Bolus Wizard calculator; missed-meal bolus reminder; capture events feature; low reservoir and battery alerts; silent/vibrate alert options; backlight; keypad lock; remote control; wireless and automatic communication with ContourLink blood glucose monitor; CareLink therapy management software to download information; built-in continuous glucose monitoring features, including Low Glucose Suspend feature. 4-year guarantee.
Accu-Chek Combo Roche Diabetes Care 	8.1x5.5x2	103g (3.6oz) including batteries	Pump: 600 Handheld: 945	Black. Skins: Black, white, yellow, green, turquoise, transparent, pink, blue	0.01 u/hr	24/day	5	1,000 diary entries (handheld); permanent memory (pump). Time and date stored for 1 hour after battery removed. Other pump settings and event memory saved regardless of battery status.	Uses lithium batteries. Pump: 200 days Bluetooth off; 80 days Bluetooth on. Handheld: 3–5 weeks	Watertight (protection rating IPX8)	Pump delivers pulses of basal insulin every three minutes, most closely mimicking the pancreas; fast occlusion detection using unique predictive alarm. Handset incorporates: remote control to the pump via Bluetooth, so no need to remove pump from clothes to operate; bolus advisor; range of safety reminders and alarms; large colour display showing all diabetes information at a glance. Compatible with Accu-Chek Smart Pix and Accu-Chek 360 download software. 4-year guarantee.
Accu-Chek Spirit Roche Diabetes Care 	8.1x5.5x2	103g (3.6oz) including batteries	600	Blue	0.1u	24/day	5	30 bolus, 30 alerts and errors, 30 daily totals, 30 temporary basal rates.	4 weeks	Watertight to 2.5m for up to an hour	Three operating menus; tactile buttons; reversible display; backlight; rechargeable battery option; KeyLock; automatic off. 6-year guarantee.
Accu-Chek D-Tron Plus Roche Diabetes Care 	10.5x4.8x2.1	119g (4.2oz) including power pack and cartridge	600	Anthracite, blue	0.1u	24/day	2	Last 10 bolus, last 10 alerts and errors, last 7 daily insulin totals. With DiaLog SW, last 1,400 events.	6.8 weeks	Watertight to 30cm for up to half an hour	Use with pre-filled 3.0ml HumaLog pen cartridge, tactile buttons, backlight, KeyLock, automatic off. 2-year guarantee.
mylife OmniPod Insulet Corporation 	PDM: 6.4x11.4x2.5 Pod: 4.1x6.2x1.7	PDM: 125g (4.4oz) including batteries. Pod: 34g (1.2oz) with full reservoir	1,728	Blue	0.05u	Each program can have 24 segments	7	90 days of insulin delivery, blood glucose, carbohydrate and alarm data (up to 5,400 records).	PDM: 3 weeks	Pod is waterproof to 25ft for up to an hour (international protection rating IPX8)	No tubing required. System includes a disposable Pod that is worn for 72 hours and a PDM (Personal Diabetes Manager) that wirelessly controls the Pod's functions. The Pod integrates the infusion set, cannula, 200u reservoir and automated inserter. The PDM includes a bolus calculator; a built-in FreeStyle blood glucose meter; temporary basal rate options; and meal, correction, normal, or extended bolus options. 4-year guarantee.

Manufacturer	Website	Telephone
Abbott Diabetes Care UK	www.abbottdiabetescare.co.uk	0500 467 466
Actavis UK Ltd	www.actavis.co.uk	01271 311200
Advanced Therapeutics UK	www.advancedtherapeuticsuk.com	01926 494222
AgaMatrix Europe Ltd	www.agamatrix.co.uk	0800 093 1812
Animas	www.animascorp.co.uk	0800 055 6606
Arctic Medical	www.arcticmedical.co.uk	01227 832400
Bayer Diabetes Care	www.bayerdiabetes.co.uk	0845 600 6030
BBI Healthcare	www.bbihealthcare.com	0845 677 3349
Daiichi Sankyo UK	www.daiichi-sankyo.co.uk	01753 893600
Eli Lilly and Company	www.lilly.co.uk	01256 315000
European Pharma Group	www.epag.com	+31 (0) 20 3160140
GlaxoSmithKline UK	www.gsk.com	0800 221 441
Insulet Corporation	www.myomnipod.co.uk	0844 856 7820
LifeScan	www.lifescan.co.uk	0800 121 200
Medtronic	www.medtronic-diabetes.co.uk	01923 205167
Menarini Diagnostics	www.menarini diag.co.uk	0118 944 4100
Nipro Diagnostics	www.niprodiagnostics.com	0800 085 8808
Merck Serono	www.merckserono.co.uk	020 8818 7200
Merck Sharp & Dohme	www.msd-uk.co.uk	01992 467272
Novartis Pharmaceuticals UK	www.novartis.co.uk	01276 692255
Novo Nordisk	www.novonordisk.co.uk	0845 600 5055
Owen Mumford	www.owenmumford.com	01993 812021
Pfizer	www.pfizer.co.uk	01304 616161
Roche Diabetes Care	www.accu-chek.co.uk	0800 701 000
Sanofi-Aventis	www.sanofi-aventis.co.uk	01483 505515
Takeda UK	www.takeda.co.uk	01628 537900
Wockhardt UK	www.wockhardt.co.uk	01978 661261

Using a pen

If you have decided to use an insulin pen, the chart on pages 22–23 describes the different models available. Whether reusable or prefilled, your choice may be dependent on which insulin you and your healthcare team have decided is best for you. If you use a reusable pen, your insulin will need to come from the same manufacturer.

A pen's features might influence your decision, but they should not be your first priority. A number of different needle lengths are available (4mm, 5mm, 6mm, 8mm, 12mm, 12.7mm) and some may be available in different gauges (widths). Your healthcare team will go through these with you and choose the one that suits you best. This will depend on a number of factors.

Pen needles

If you have a little more body fat in the areas used for injecting, you may need a longer needle. This helps to make sure that insulin reaches the subcutaneous tissue (the fat layer) for better absorption into the body.

If you have less body fat, you might need a smaller needle. This helps to avoid injecting into muscle, where the insulin could be absorbed too quickly, possibly leading to hypoglycaemia (low blood glucose levels). Whichever needle you use, it must be able to deliver the insulin efficiently. You may need to choose a certain make of needle to fit your pen. It is important when you first start using an insulin pen to get training from your healthcare team or pharmacist. You should be aware of:

- how to use the pen
- where and how to inject
- the side effects of treatment
- the action times of the insulin
- how to dispose of sharps (needles).

As mentioned on the right (number 8), it is recommended that you use each needle only once. This is because needles get blunter with every use and the lubricant on the needle is removed once used, making injecting less comfortable. Reusing needles also increases the risk that they will bend or break.

All pens come with a dial that lets you vary the amount of insulin you use in an injection. Depending on which type of pen you have, you will be able to dial up or down in increments of 0.5, 1.0 or 2.0 units. Contact the manufacturers (details on page 20) for more on this feature.



Comfortable injecting

- 1 Choose an area of your body that has plenty of fatty tissue.
- 2 If you have been advised to, pinch up the skin but not too firmly.
- 3 Insert the needle at a 90° angle
- 4 Administer insulin and leave in place for a count of 10.
- 5 Withdraw needle and release the skinfold.
- 6 Dispose of used needle safely.
- 7 If you find injections painful, try numbing the area by rubbing a piece of ice on the site for 15–20 seconds before injecting.
- 8 People do use needles for more than one injection, but they are recommended for single use only, as this affects insulin delivery and makes injecting less comfortable. Very fine needles may blunt more quickly, and reusing them can increase the risk that they will bend or break.

MANUFACTURER	NAME	DOSAGE (MIN–MAX)	INSULIN USED IN PEN	PEN NEEDLES USED	APPEARANCE	COLOUR	MATERIAL	CARTRIDGE OR PREFILLED	REDIAL DOSE?	CARRYING CASE
Eli Lilly	KwikPen	1–60 units	Humalog, Humalog Mix25, Humalog Mix50	BD Micro-Fine +, Penfine universal click, Unifine Pentips		Slate blue	Plastic	Prefilled	Yes	Soft case available from manufacturer
	Humulin I KwikPen	1–60 units	Humulin I	BD Micro-Fine +, Unifine Pentips		Beige	Plastic	Prefilled	Yes	Soft case available from manufacturer
	Humulin M3 KwikPen	1–60 units	Humulin M3	BD Micro-Fine +, Unifine Pentips		Beige	Plastic	Prefilled	Yes	Soft case available from manufacturer
	HumaPen Luxura	1–60 units	Lilly 3ml cartridges from Humalog and Humulin ranges	BD Micro-Fine +, Penfine universal click, Unifine Pentips		Burgundy or champagne	Metal	Cartridge	Yes	Hard case, dark brown or burgundy
	HumaPen Luxura HD	0.5–30 units (½-unit increments)	Lilly 3ml cartridges from Humalog and Humulin ranges	BD Micro-Fine +, Penfine universal click, Unifine Pentips		Rainforest green	Metal	Cartridge	Yes	Hard case, burgundy
European Pharma Group (EPG)	InsuJet*	4–50 units	All 3ml and 10ml UK insulin cartridges	None. Insulin administered by needle-free jet injections using compressed air through a precision nozzle		Green & white, blue & white or grey & white	Plastic and steel	Cartridge	No	Hard case with zipper
Novo Nordisk	FlexPen	1–60 units	NovoRapid, Levemir, NovoMix 30	BD Micro-Fine +, NovoFine, NovoFine Autocover, Penfine universal click, Unifine Pentips		Orange, green, or blue	Plastic	Prefilled	Yes	Available from manufacturer
	InnoLet	1–50 units	Insulatard, Levemir	BD Micro-Fine +, NovoFine, NovoFine Autocover, Penfine universal click, Unifine Pentips		Cream	Plastic	Prefilled	Yes	None
	NovoPen 4	1–60 units	All Novo Nordisk 3ml penfill cartridges	BD Micro-Fine +, NovoFine, NovoFine Autocover, Penfine universal click, Unifine Pentips		Blue or silver	Metal	Cartridge	Yes	Novo blue zip case
	NovoPen 3 Demi	1–35 units (½-unit increments)	All Novo Nordisk 3ml penfill cartridges	BD Micro-Fine +, NovoFine, NovoFine Autocover, Penfine universal click, Unifine Pentips		Blue with orange trim	Metal	Cartridge	Yes – see manual	Soft pouch, dark blue
	NovoPen Junior	1–35 units (½-unit increments)	All Novo Nordisk 3ml penfill cartridges	BD Micro-Fine +, NovoFine, NovoFine Autocover, Penfine universal click, Unifine Pentips		Blue with green or yellow trim	Metal	Cartridge	Yes – see manual	Soft pouch, dark blue
	PenMate	A pen device that automatically inserts the needle when a button is pushed. Fits all Novo Nordisk half-unit pens.					Blue	Plastic	N/A	N/A
Owen Mumford	Autopen Classic 3ml	1–21 units (green), 2–42 units (blue)	Eli Lilly or Wockhardt UK 3ml insulin cartridges	BD Micro-Fine +, NovoFine, Penfine universal click, Unifine Pentips		Green & white or blue & white	Plastic	Cartridge	No	Soft pouch
	Autopen 24 3ml	1–21 units (green), 2–42 units (blue)	Sanofi-aventis 3ml insulin cartridges	BD Micro-Fine +, NovoFine, Penfine universal click, Unifine Pentips		Green or blue	Plastic	Cartridge	No	Soft pouch
Sanofi-Aventis	SoloSTAR	1–80 units	Lantus, Apidra, Insuman Comb 25	BD Micro-Fine +, Penfine universal click, Unifine Pentips		Blue or grey or white	Plastic	Prefilled	Yes	Soft case available from manufacturer
	OptiSet**	2–40 units	Insuman, Lantus, Apidra	BD Micro-Fine +, Penfine universal click, Unifine Pentips		White	Plastic	Prefilled	No	Soft case available from manufacturer
	ClikSTAR	1–80 units	Insuman, Lantus, Apidra	BD Micro-Fine +, Penfine universal click, Unifine Pentips		Blue or silver	Plastic	Cartridge	Yes	Black zip case
	OptiClik**	1–80 units	Lantus, Apidra	BD Micro-Fine +, Penfine universal click, Unifine Pentips		Dark blue or light grey	Plastic	Cartridge	Yes	Hard case, blue
	OptiPen Pro 1**	1–60 units	Insuman, Lantus, Apidra	BD Micro-Fine +, Penfine universal click, Unifine Pentips		Green or white	Plastic or steel	Cartridge	Yes	Hard case, pale blue

All pens take 3ml (300 units) cartridges. All pens available on prescription*, but not PenMate.

* At the time of going to press, EPG was applying to get the InsuJet pen (which has replaced the SQ-PEN) available on prescription.

In the meantime, people who urgently need their InsuJet pen replaced or need consumables, and who would normally receive the device on prescription, can receive it free of charge from the manufacturer. Contact EPG on +31 (0) 20 316 0140 or at info@nipholding.com.

** Sanofi-Aventis' OptiSet, OptiClik and OptiPen Pro 1 pens will be discontinued from 31 December 2011.

BD Micro-Fine + Length: 4mm, 5mm, 8mm, 12.7mm. Gauge: 32G (4mm); 31G (5mm, 8mm); 29G (12.7mm) **NovoFine** Length: 6mm, 8mm, 12mm. Gauge: 31G (6mm); 30G (8mm); 28G (12mm) **NovoFine Autocover** Length: 8mm. Gauge: 30G **Penfine universal click** Length: 6mm, 8mm, 10mm, 12mm. Gauge: 31G (6mm, 8mm); 29G (10mm, 12mm) **Unifine Pentips** Length: 6mm, 8mm, 12mm. Gauge: 31G (6mm, 8mm); 29G (12mm).