Table 2: Examples of insulin preparations in the UK

Insulin type and brand names – some examples	Onset of action after SC injection*	Notes on administration	*Complete this column with devices you commonly dispense in your pharmacy*
Short-acting soluble insulin (human)			
Actrapid, Humulin S, Insuman Rapid	30 minutes	30 minutes before food Usually three times a day (meal-time insulin)	
Short-acting soluble insulin (animal)			
Hypurin Porcine Neutral	30-60 minutes	As advised by the diabetes specialist team	
Rapid-acting human insulin analogues			
Apidra (insulin glulisine), NovoRapid (insulin aspart), Humalog (insulin lispro)	10-20 minutes	Within 15 minutes before food Usually three times a day (meal-time insulin)	
Intermediate-acting insulin			
Insulatard, Insuman Basal, Humulin I (Isophane insulin)	1-2 hours	Cloudy insulin. Resuspend before use (e.g. by rotating several times in palms of hands)	
Pre-mixed biphasic insulin (analogue: mixture of a rapid-acting insulin analogue and an intermediate-acting insulin)			
Humalog Mix25 NovoMix 30	10-20 minutes	Cloudy insulin. Resuspend before use (e.g. by rotating several times in palms of hands)	
Pre-mixed biphasic insulin (human: mixture of short-acting soluble insulin and intermediate isophane insulin)			
Humulin M3	30-60 minutes	Cloudy insulin. Resuspend before use (e.g. by rotating several times in palms of hands)	
Insuman comb 25			
Long-acting human insulin analogues			
Lantus (insulin glargine)	N/A	Once daily	Insulin glargine is also available in 300 units/ml (Toujeo) Insulin degludec is also available in 200 units/ml (Tresiba 200)
Levemir (insulin detemir)		Once or twice daily	
Abasaglar (biosimilar insulin glargine)		Once daily	
Tresiba 100 (insulin degludec)		Once daily	
Ultra-fast acting human insulin analogue			
Fiasp (insulin aspart with nicotinamide and L-arginine hydrochloride)	4 minutes	Usually three times a day up to 2 minutes before meals (meal-time insulin)	

**The onset and duration of action of any insulin may vary considerably in different individuals or at different times in the same individual.*
Prescriptions must be written by BRAND name (including the strength and presentation of the insulin). The device must be specified

beta-blockers and clonidine. Those who experience hypoglycaemia without early warning signs need to monitor their blood glucose more frequently.

Mild to moderate hypoglycaemia is usually treated by eating or drinking 15-20g of a fast-acting carbohydrate (e.g. three glucose tablets or a small carton of pure fruit juice). To help restore the blood sugar and stop the levels going down again, patients should eat or drink 15-20g of a slower-acting carbohydrate such as a piece of fruit, a glass of milk or a sandwich.

Severe hypoglycaemia (where the patient may be unconscious) requires urgent treatment with glucagon administered intramuscularly or subcutaneously. The patient should be given a sugary drink or snack as soon as they are conscious, followed by a slower acting carbohydrate. An ambulance should be called if the patient has not recovered after 10 minutes of receiving the injection. Patients prescribed glucagon must check the expiry date regularly.

Illness and infection

Insulin requirements usually increase during illness or infection and patients should be advised to monitor their blood glucose more often and adjust their insulin doses appropriately during this time. 'Sick day rules' are a key safety measure community pharmacy teams can remind patients of. Where patients do not administer enough insulin, they could develop hyperglycaemia, early signs of which include polydipsia (excessive thirst), polyuria (abnormally large production/passage of urine), loss of appetite, nausea, vomiting and dry skin. Untreated hyperglycaemia can lead to diabetic ketoacidosis (DKA) or hyperosmolar hyperglycaemic syndrome (HHS), both of which require hospitalisation.

Patients should contact their diabetes team if they are unsure of what to do during periods of illness. Community pharmacists and their support staff can check patients' understanding of how to use their insulin when unwell or if experiencing higher than usual levels of stress.

Insulin-related medication errors

The most common medication errors are:

- Prescribing errors where abbreviations are added to the intended dose (e.g. 'U' or 'IU' for units) and the dose is misread
- Dispensing errors where the incorrect insulin or insulin device is given to patients or where the dose is misread as a result of inappropriate use of abbreviations (see above).

CPD

Next month's CPD module...

An introduction to pharmacogenomics