

Avoiding Insulin Errors

Errors in handling and administering insulin can be easy to make—especially if you use more than one kind of insulin to manage your diabetes. Here are some tips to help ensure your safety when using insulin products.

1. Know your insulin.

There are many insulin products on the market today. Although some animal-based insulins are still available, most of today's products are "human" insulins, which are made in laboratories to resemble the insulin produced by the human body.

For each type of insulin you use, you need to know:

- its brand name and the pharmaceutical company that manufactures it
- its type—long-acting, intermediate-acting, short-acting, or rapid-acting
- its action profile—*onset* of action (when it starts to work), *peak* action, if any (when it has its greatest action), and *duration* of action (how long it works).

You also need to monitor how each type of insulin works in your own body. Guidelines about insulin action are good rules of thumb, but sometimes people notice that their insulins seem to work differently in them than in other people. Insulin action can also vary depending on your level of physical activity, injection site, and other factors. With experience, you and your health care team can identify and work around such variations.

2. Measure carefully.

Insulin is a very potent medication. Injecting even a small amount more than your prescribed dosage can make a huge difference in your blood glucose level. This is especially true if you have a small daily dose (less than 50 units per day).

It is important to measure carefully when drawing up insulin in a syringe. If you have trouble seeing the markings on your syringe, ask someone else to check

your dose or buy a magnifier that fits onto the syringe. Another option is to use a disposal pen device for injecting insulin. These are available for most types of insulin.

3. Store safely.

Check the package insert that comes with each type of insulin you use for recommendations about the best way to store your supply. All insulins will maintain their potency longer if kept in a refrigerator. All insulins must be kept from freezing or overheating.

4. Ask before mixing.

If you use more than one insulin, ask a member of your health care team whether and how you should mix your insulin doses together in the same syringe. For most insulins, mixing is fine but must be done properly, so ask for instructions. In some cases, mixing is not safe. Lantus (glargine) insulin cannot be mixed in the same syringe with any other insulin.

Types of Insulins

Type	Source	Color	Approximate Length of Action*		
			Onset	Peak	Max
Rapid-acting					
Lispro (Humalog)	Human	Clear	15 minutes	30–90 minutes	4–6 hours
Aspart (Novolog)	Human	Clear	15 minutes	45 minutes	3–5 hours
Short-acting					
Regular	Human, porcine	Clear	30–60 minutes	2–3 hours	8 hours
Intermediate-acting					
NPH	Human, porcine	Cloudy	2–4 hours	6–10 hours	14–18 hours
Lente	Human, porcine	Cloudy	3–4 hours	6–12 hours	16–20 hours
Long-acting					
Ultralente	Human	Cloudy	6–10 hours	10–16 hours	20–24 hours
Glargine (Lantus)	Human	Clear	2 hours	None	24 hours
Mixtures					
70/30	Human	Cloudy	30 minutes	2–12 hours	24 hours
50/50	Human	Cloudy	30 minutes	3–5 hours	24 hours
Humalog 75/25	Human	Cloudy	15 minutes	30–90 minutes	24 hours

*All times are approximate and may differ with each individual and vary with site and other factors.

Adapted from Hirsch IB: Pharmacotherapeutics of insulin therapy (optimizing insulin therapy in patients with diabetes). Presented to MedStar Research Institute, Washington, D.C., April 5, 2002.

