

What insulin can I put in my pump?

Melissa P Ford looks at the different types of insulin you can put in a pump

A few of us on the [Insulin Pumpers UK discussion group](#) have had experience using both soluble insulins and rapid-acting insulin analogues for pump therapy. Here is a quick run-down of implications of using soluble insulin vs using a rapid-acting insulin analogue in pump therapy:

Soluble insulin: Actrapid; regular human insulin

- Makes it harder to have your two-hour post-meal blood glucose level at the target of <10 mmol/L (180 mg/dL) (<8 mmol/L (144 mg/dL) is my personal target) because soluble insulin may still be working on reducing your glucose level two hours post-meal
- Must be bolused 30–45 mins before eating, which reduces your flexibility in terms of the time that you eat (you must plan all meals/snacks ahead of time) and means you must eat every carb you anticipated, and nothing extra
- It's quite possible that you will have a hypo three to five hours after a meal if you overestimate your carbs or take some exercise after a meal because the insulin works for a longer time **and** its duration of action is dose-dependent
- Your blood sugar will take around 60 to 90 minutes to respond to a temporary reduction or increase in basal rate (the basal insulin infused two hours ago is still very much in your system) and it could take two to three hours for your blood sugar to reach your target range if you increase your basal rate because of illness, stress, or as a strategy for consuming a high-fat/high-protein meal (the "pizza effect")
- Is often useful for pumpers who have *gastroparesis* (delayed stomach emptying) or who have an allergic reaction to insulin analogues
- Some people prefer pork or beef soluble insulin in their pump. It is slower acting, but works more reliably for them. More about this on the [Insulin Dependent Diabetes Trust website](#)

Rapid-acting insulin analogues: Humalog (lispro), NovoRapid/Novolog (aspart); Apidra (glulisine)

- Reach their peak of action within 30 minutes of injection/bolus; finish most of their action by two hours post-bolus. You can tell earlier on if you got the dose right and make a correction sooner if your blood glucose is above your two-hour postmeal target [[Footnote](#)]
- Allow greater flexibility in eating. If your meal is bad at a restaurant, you can send it back, wait for another one, and then bolus just before eating (you don't have to eat the bad food because of having needed to take insulin before even ordering a meal). If you want a snack *now* and don't want to wait 30 mins after bolusing to eat it, you can; if you want to bolus for each thing that shows up in front of you at a long dinner party, you can (I love that! I don't have to plan my entire meal, I can just eat what comes as it comes)
- If you want to exercise a couple of hours after a meal, you don't need to worry as much that the insulin you took for the meal will cause severe hypoglycaemia when you exercise – there's less chance of the double-whammy effect of leftover mealtime insulin + exercise causing a severe hypo
- You can vary your basal dose more dynamically. If my bg reaches 4.3 mmol/L (77 mg/dL) and I don't feel like having a snack, I reduce or suspend my basal rate for the next hour and my blood glucose rises up to 5 on its own! (I save a lot of calories that way!)
- You can reduce your basal rate just about an hour (rather than two to three hours) before physical activity and minimize the risk of a hypo during the exercise
- Great for people who don't eat meals and do exercise at specific intervals every day. If no two days are exactly alike, a rapid-acting insulin analogue may increase satisfaction with insulin therapy and can offer better blood glucose control

My personal experience of using buffered human regular (Actrapid-style) insulin in a pump for the first two years that I had a pump (1996–1998) was OK. I was much better off than I had been with injections! But if I'd been in the dark with injections, I got a torch when I got a pump and used buffered human regular insulin in it. Then the overhead lights came on when I began pumping with Humalog :) .

[Footnote: Every minute that we spend with a glucose level >5 mmol/L (90 mg/dL) is a minute of blood glucose levels that

may harm our kidneys, eyes, heart, and nerves. Sad but true: we do the best we can to avoid complications but we are all at risk.]

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