

# Back to injections

*Abigail King used a pump for a few years and then went back to injections. She says why*

I have had diabetes since the age of 12 and am now 31. From the age of 26 until recently I used an insulin pump with Humalog and then Novorapid. For most of this time I would not entertain the idea of going back onto injections. My treatment prior to the pump consisted of a traditional basal bolus regimen with Insulatard before bed and Actrapid prior to meals (followed by Humalog for the 2 months prior to initiating pump therapy)

Before the pump I was plagued by frequent hypos often at night but also during the day. This was not helped by my irregular schedule. My family have never been the type to sit down to meals at a set time. Being a medical student for 5 years and then life as a junior doctor did nothing to redress this. I have always resented anyone who expects someone to eat "on time" regardless of what they are doing and what is going on socially. I did however, stick to a fairly consistent amount of carbohydrate and adjust insulin according to blood glucose readings over the past few days. On hindsight some of my night time hypos were due to evening meal insulin still being present when insulatard was peaking

My hypos were becoming more frequent and although I was still having warning symptoms I was concerned about the potential effect on my professional life. I therefore made avoiding hypos my main goal: unfortunately this meant my HbA1c drifted up into the mid 9s. Humalog helped a little with some of the hypos, in particularly the night time ones, but as I was not encouraged to split the insulatard there would be a period before the evening meal when both types were wearing off with a resulting high blood glucose. Looking back I should have split the Insulatard but by this time I knew I was starting the pump.

The pump was a success. I achieved a 1.5 per cent reduction in A1c in the first 6 months and after this my highest was 7.6 percent with one "blip" of 8.1 per cent which appears to be related to a faulty blood glucose meter. I even achieved 2 or 3 figures in the 6s. Mild hypos were quite frequent but no severe ones occurred and I felt that this was a price I was prepared to pay for the increase in overall control and well being (as opposed to the constant variation between too high and too low prior to the pump, with few periods of stability). Having this tool at my disposal, together with [Insulin Pumpers UK](#), increased my confidence and improved my attitude towards my diabetes no end, making me feel that I had at least some degree of control over the condition rather than feeling hopeless and inadequate. I will add here that, while dietary freedom is one of the perceived benefits of the pump, if I overindulged it was still hit and miss as to whether I could go to bed and wake up the next morning with a decent blood glucose level, despite adjusting my bolus according to carbs, and increasing the basal overnight if a lot of protein or fat (eg curry) was eaten.

After being a pumper for almost 3 years I began to experience ketotic episodes. I managed to extricate myself from these with no harm (apart from the stress and generally horrible feeling that high blood glucose and ketones cause). It took me some time to realise that these were caused by air in the tubing. I was always careful to fill the cartridge with insulin at room temperature and to be meticulous as regards filling it and priming the tubing. But for some reason the problem recurred frequently. I even went so far as to send my pump off for service and got a new replacement early as I queried a problem with the pump mechanism rather than air. At first I was still very attached (literally and psychologically) to the pump and it would be removed "over my dead body". As time progressed, however, I became exasperated with these episodes and even a little anxious: what if I was to find myself in a situation away from home perhaps, and my luggage got lost, etc etc.

One other disadvantage was that the pump had stopped me from swimming in the sea on a hot day on a couple of occasions as I was worried about taking it off and leaving it on the beach (possibility of theft). Also I had avoided a couple of "white knuckle" fairground rides, not wanting to take it off for the same reason and worried that it was not secure (okay any excuse!)

I suppose in a way the pump was now beginning to make me feel slightly imprisoned rather than liberated.

I discussed my concerns at my diabetic clinic. The clinic I now attend is a pump centre. The diabetologist himself has Type 1 diabetes and until recently used a pump. It was concluded that perhaps I was more prone to very high blood glucose levels and ketones as I am on a relatively low insulin dose so a relatively small amount of air in the tubing represents several hours of no insulin. I was no way coerced into

stopping the pump but it was agreed that Levemir as my basal insulin may be a viable alternative. I will add that my pump consumables were funded so finance was not an issue. One other factor: for the last 6 months of pumping I had been on an almost constant basal rate so I knew a flat relatively peakless insulin should work quite well for me.

## Levemir

This is a new basal insulin analogue. It is recognised that it does not quite last for 24 hours. This could be a problem as I was used to having the constant trickle of basal insulin on the pump (when it was working as it should). It was therefore decided that I would immediately split the dose 1/2 and 1/2 rather than experimenting with once daily which would probably be ineffective as I tend to eat an early lunch and a late evening meal, so could end up with insufficient insulin in the late afternoon and early evening. On the pump my basal dose was 0.6 units per hour with the exception of 2 to 7 pm when the rate was 0.5 per hour, i.e. a total basal dose of 13.9. I converted to Levemir 8 units at approximately 8am and 8 units at 8pm. This was the dose advised and I was happy to take this rather than starting off at 7 as it seems to be a well recognized phenomenon that injectors use slightly more insulin than pumpers. I kept my Novorapid dose the same: approximately one unit per 10g carbohydrate.

I soon got used to the injections. They are not a big deal to me. The important issues are to get reasonable control without too many hypos and without having to schedule my day according to my diabetes. The very high blood glucose levels are less frequent and hypos are certainly no more although I have to admit I had one of 1.7 the other day as I was "too busy" to treat it straight away. Still fully conscious and coherent but bathed in sweat, feeling dreadful and concentration drifting. Most hypos appear to be within 3 hours of a meal suggesting a need to fine tune the Novorapid. I find I am needing less glucose when I go to the gym – I did not reduce my infusion rate when on the pump so needed about 60g to see me through an hour's session. Now my blood glucose seems to stay quite constant before and after, if I have not taken any Novorapid within the last 3 hours. If my glucometer reading is 6 or less I may have 10 to 20 g glucose. I still need about the same amount of glucose for a swim – perhaps 10 to 20 g if blood glucose is normal (when on the pump I would disconnect so had no insulin going into me for a while although would expect this to show up as higher blood glucose later rather than immediately after swimming). I have noticed a slightly increased tendency to hypo a few hours after exercise which is strange as I did not turn the pump down after exercise. I do not need to eat vast amounts to treat a hypo: no difference here from the pump.

Weight gain has not been an issue. I am lucky not to have to battle with the bulge and for the first couple of weeks I noticed a slight weight loss: presumably due to eating less in relation to exercise. I love toast or Ryvita spread with peanut butter and this is an excuse to have these as a post exercise or pre bed snack rather than reducing insulin.

The one difficulty was over Christmas: too much food and no exercise. I am not a huge chocolate or dessert eater but can consume large portions of meat and nuts. The protein and fat, when consumed in these quantities, give me a sustained rise in blood glucose, and I am more likely to have these foods in the evening so will be asleep and not able to give several boluses in the following hours. Even with the pump this was hit and miss. I increased my Levemir as well as giving more Novorapid but blood glucose still crept up into the mid teens on wakening (and sometimes at other times during the day). A few units of Actrapid before bed helped to prevent this on a couple of occasions as Actrapid lasts for 6 or 8 hours. I would not try this unless I was very confident that what I had eaten was going to have this sustained effect overnight. Obviously eating large amounts of these foods is unhealthy but we all need a splurge now and again.

Lying in has not been problematic. At weekends I often get up at around 9.30 and take the Levemir then rather than at my week day time of 8: I then delay the evening injection for an hour or so. Similarly if going out in the evening and likely to be in a situation where taking an injection is not convenient, taking the evening one an hour earlier does not seem to be a problem. I had a high blood glucose level one Saturday when I woke up at 11.30 but I think several other factors may have contributed to this.

I am very glad that I had the use of the pump. I learnt a lot about my diabetes as a result and this knowledge has enabled me to make the transition back to MDI. I would not have changed if my basal rates varied widely across the day: for example if I had a strong dawn phenomenon. The pump is a necessity for people with this type of variability. I am still not sure why I seemed so susceptible to the problems that I encountered.

It is very clear that many people who are on injections are not taught to use them optimally. I achieve more or less the same flexibility as when I was on the pump, although overindulging is going to take a little more juggling of insulin types and injections. It is a fallacy that people on modern injection regimens have to do things such as eat "on time", or necessarily put up with worse control or more hypos. Some people need a pump because of their insulin requirements but if they don't then quality of life on injections should be as good. Regular blood glucose tests are necessary for good control whichever method you use.

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