# Insulin initiation in type 2 diabetes. More science than art

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***Editor***

**'The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them' – Sir William Bragg**

To the uninitiated and untrained, starting and manipulating insulin in type 2 diabetes is bordering on witchcraft. The overriding fear is causing severe hypoglycaemia. Nurses involved in starting insulin used to comment to me that patients should be treated as individuals, and dose manipulation was very personal giving the impression that insulin therapy was more art than science with quasi-mystical connotations! Contacts between patients and the nurse were frequent, dose increments were haphazard but often erring on the side of caution, and achieved glucose levels were extremely variable. Before the introduction of long-acting analogues, the usual method of introducing insulin was to start twice-daily premixed preparations that certainly improved glucose levels but were associated with marked weight gain (Richardson and Kerr, 2003). Excess weight gain was probably the most common grumble heard in the hurly burly of traditional diabetes clinics.

Things have changed recently. Nowadays, the addition of once-daily long-acting analogue insulin to oral agents has become de rigueur in type 2 diabetes, so much so that many individuals have their first experience of insulin at their GP's surgery. This makes intuitive sense provided that, at a practical level, some thought is given to:

- the starting dose of insulin
- the glucose targets
- the optimum frequency for dose titration
- the question of whether some or all oral agents should be continued
- the risks.

Most of us 'in the business' so to speak will have views on this but what about the evidence? Fortunately, there is some. Rigorously implemented insulin titration algorithms using basal insulin added to oral treatment leads to better average control with little risk of hypoglycaemia (Strange, 2007). Furthermore, starting insulin in groups is more cost effective than individual insulin initiation, and achieved $HbA_{1c}$ levels are expected to be around 6.8%, particularly if the sulphonylurea is continued (Yki-Jarvinen et al, 2007). Utilising messaging technologies also appears to add value.

It seems that the 'start low, go slow' approach remains appropriate. Ten units of long-acting analogue insulin titrated against the fasting glucose makes sense, and titration of the insulin dose by the patient seems to be better than titration by a clinic. One intriguing finding is that most of the benefit of adding insulin to oral therapy in type 2 diabetes appears to peak at 12 weeks. Escalating insulin after this simply adds to the problem of weight gain and perhaps induces a degree of insulin resistance (Strange, 2007). At that stage, it might be worth considering the addition of a prandial dose of insulin, but trials need to be done on choosing which meal and how much insulin.

Overall, conclusions from recent trials are that using rigorously implemented insulin titration algorithms to add basal insulin in type 2 diabetes does lead to better glycaemic control with little risk of hypoglycaemia as long as the fasting plasma glucose target is not lower than 5.5 mmol/l. Of course, there are clinicans who still believe that long-acting modern insulin offers little or no practical advantage over traditional intermediate-acting insulin, although they are probably now in the minority. What we need now is regular reporting of whether or not these simple rules are followed and if the desired outcomes are achieved. It doesn't really matter where and what insulin is started but it matters a great deal if the outcomes that are important to patients are realised. Publishing performance data such as this could be the next 'big thing' in the revolution occurring in diabetes care and perhaps there may even be financial incentives associated with this!



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Strange P (2007) Treat-to-target insulin titration algorithms when initiating long or intermediate acting insulin in type 2 diabetes. *Journal of Diabetes Science and Technology* **1**: 540–8

Yki-Jarvinen H, Juurinen L, Alvarsson M et al (2007) *Diabetes Care* **30**: 1364–69