Treating to target with insulin therapy

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Introduction

Insulin therapy is the mainstay of treatment for type 1 diabetes, but is also being used increasingly to treat type 2 diabetes. There is also greater recognition that insulin can be initiated in primary care. This article discusses the factors that need to be considered when using insulin in primary care, including working towards targets, skills development, insulin algorithms, and helping people with diabetes to learn to adjust their own insulin dosage.

The *National Service Framework for Diabetes: Standards* document highlights the need to improve blood glucose control to reduce the risk of developing microvascular, and also possibly macrovascular disease (Department of Health, 2001). At a practice level, the new GMS contract introduced in 2003 (BMA, 2003) includes clinical standards in diabetes within the quality and outcomes framework, with 30 of the total 99 diabetes points related to glycaemic control (*Table 1*), and a scale of increasing numbers of points allocated to achieving tighter control.

As a result, there is now a national drive to improve glycaemic control in both type 1 and type 2 diabetes. With type 2 diabetes specifically, as included in the National Institute for Clinical Excellence (NICE) clinical guidelines, this means offering insulin 'to people with diabetes with inadequate blood glucose control on optimised oral glucose-lowering drugs' (NICE, 2002).

Initiating insulin

Traditionally, insulin initiation has been carried out by a specialist diabetes team in secondary care for all people with diabetes (type 1 or type 2). This is still generally the case for type 1 diabetes, where insulin is required urgently and major lifestyle adjustments need to be made within a short space of time. In type 2 diabetes, however, insulin initiation is increasingly being carried out in primary care (Gadsby and Spollett, 2003).

In some areas, specialist teams are being developed in the community setting (Burden, 2003), and this may be one way of enabling insulin initiation to take place without a secondary care referral. This

Table 1. GMS contract clinical standards linked to glycaemic control

Indicator		Points	Maximum threshold
DM5	Percentage of diabetic patients who have a record of HbA_{1c} or equivalent in the previous 15 months	3	90%
DM6	Percentage of patients with diabetes in whom the last HbA_{1c} is ≤7.4 (or equivalent test/reference range depending on local laboratory) in previous 15 months	16	50%
DM7	Percentage of patients with diabetes in whom the last HbA_{1c} is ≤10 (or equivalent test/reference range depending on local laboratory) in previous 15 months	11	85%

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1 Developing skills in insulin initiation and management creates anxieties for many health professionals in primary care.

2 Concerns centre on lack of knowledge of different insulins, which regimens to choose, how the different insulin devices work, and how insulin doses should be adjusted.

3 Courses are available to help those new to managing insulin to develop practical skills.

type of service is not, however, available in all localities. It can be argued that as insulin is becoming commonplace in the treatment of type 2 diabetes, the most sensible way forward is to develop services within each surgery to manage insulin initiation.

Insulin skills development

For many health professionals working in primary care, developing skills in initiating and managing insulin therapy raises certain anxieties. It is often seen as a complex and difficult area to tackle, with concerns centred on lack of knowledge of different insulins, which regimens to choose, how the different insulin devices work, and how insulin doses should be adjusted.

For those wishing to acquire skills in insulin management, there are courses available to overcome some of these difficulties. One of these is the 'Insulin for Life' course (see p 82), coordinated by Warwick Diabetes Care and run locally across the country. Another is a Master's level module entitled 'The Theory and Practice of Insulin Initiation', run by the Medical School at Warwick University. Both courses aim to help those new to managing insulin to develop practical skills.

While it may be important to have a general awareness of the many different insulins, many of these are not in common use today. Many health professionals who initiate insulin, in any setting, tend to use a relatively narrow range of the insulins currently available. This means that learning how to use insulin safely can be simplified by initially gaining skills in using a very small number of insulin preparations in practice, and using them in a systematic way.

Insulin algorithms

Insulin algorithms are increasingly being used as a safe and effective way to initiate insulin. The benefits of using insulin algorithms are outlined in *Figure 1*. They also fit in with the NSF for Diabetes: Delivery Strategy, which states that 'PCTs should, by 2006, ensure that systematic treatment regimens are in place for people with diabetes' (DoH, 2002).

Insulin algorithms are already available in many areas, having been produced either by pharmaceutical companies or by health professionals working in diabetes care. They should specify:
- Which categories of people with diabetes the algorithm applies to, and any exclusions to this.
- Local practice regarding which types of oral agents should be continued when insulin is initiated in type 2 diabetes.
- The type of insulin to which the algorithm applies: the algorithm may be specific to the use of one type of insulin or regimen, or may be more general. In the latter case, it should specify when different insulins might be used.
- Insulin delivery devices: these must match the insulins used. An algorithm can also indicate which devices match the insulins prescribed.
- The starting dose: this should be reasonably low, to allow people with diabetes to learn how to give themselves insulin without fear of hypoglycaemia, and to titrate this against blood glucose levels to achieve good glycaemic control.
- Dosage increase instructions, i.e. the amount that different insulin doses should be increased by, and how often they should be changed.
- Target blood glucose and HbA_{1c} levels: these are linked to the last point, and should be integral to recommendations for titrating the dose.
- Frequency of blood glucose monitoring: in the initial stages of insulin therapy, blood glucose monitoring results provide vital information on which to base adjustment of insulin doses.
- Information on what to do if adequate glycaemic control is not achieved.

Ideally, the algorithm should be developed

- Insulin algorithms provide a relatively simple way of initiating and adjusting insulin dosages
- They can be used by those less familiar with insulin therapy as a way of developing skills within a relatively narrow range
- They can help increase familiarity with commonly used insulin devices
- They can ensure consistency of care within a practice or within a PCT
- They can increase the consistency of advice given to people with diabetes
- They can ensure that prescribing of different types of insulin is being carried out appropriately

Figure 1. Benefits of using insulin algorithms.

locally, with input from a variety of health professionals who might be involved in insulin initiation, e.g diabetes specialist nurses, GPs, practice nurses, dietitians. The aim is to provide a safe framework within which to practise, so there is a need for simplicity and clarity throughout.

The NICE clinical guideline on management of type 2 diabetes specific to blood glucose advises that oral therapy should be continued when using insulin therapy in type 2 diabetes (NICE, 2002). The same guideline points out that there has been little research into which insulin is superior, and suggests that choices should be linked to local experience, patient preference and relative costs. Any algorithms in use within a locality should take these points into consideration.

It is important that an insulin algorithm is not too restrictive. In practice, although it may be possible to apply broad parameters to many people starting insulin, the variation in individuals' lifestyles and preferences means that there should always be scope for tailoring practice to an individual's needs. If health professionals are novices in using insulin therapy, they may need to refer individuals to a specialist team to deal with circumstances that are less familiar, such as initiating an insulin regimen that is different from that specified in the algorithm.

Self-adjustment of insulin

Insulin algorithms are not simply about health professionals being able to initiate and adjust insulin doses – they can also be used to help people with diabetes to learn how to adjust their own insulin doses.

The need for people with diabetes 'to enhance their personal control over the day-to-day management of their diabetes' is highlighted in Standard 3 of the NSF for Diabetes (DoH, 2001). To enable them to do this, health professionals need to support them in a more empowering way, rather than making all the decisions about insulin dose changes themselves.

There is ample evidence that when people are supported in making their own decisions, they have greater motivation to manage their diabetes, and also achieve significant reductions in their HbA_{1c} levels

(Williams et al, 1998). There is also evidence to show that an empowerment approach helps people to achieve greater self-efficacy and also improves blood glucose control (Anderson et al, 1995).

One way to help people with diabetes learn how to adjust their insulin doses is to develop materials and algorithms for use by the individuals themselves when they first start injecting insulin. This approach is supported by Walker and Rodgers (2004), who provide people with diabetes with useful information about how they can adjust their insulin doses to maintain or improve their glycaemic control.

Conclusion

Skills in insulin initiation and management are becoming increasingly important in primary care, as insulin is required to achieve glycaemic targets in many people with type 2 diabetes. Accessing national or local courses can help health professionals to develop skills in insulin therapy, and insulin algorithms can provide useful and safe systematic insulin regimens for use in practice.

Helping people with diabetes to learn how to adjust their own insulin doses increases their chances of achieving and sustaining good glycaemic control over months and years. In today's target-driven NHS, we need to use all these methods, not simply for financial gain but also to improve the experiences of people who live with diabetes every day of their lives. ■

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1 The need for people with diabetes 'to enhance their personal control over the day to day management of their diabetes' is highlighted in Standard 3 of the NSF for Diabetes (DoH, 2001).

2 Health professionals therefore need to provide support to people with diabetes in a more empowering way, rather than making all the decisions about insulin dose changes themselves.

3 Research shows that when people are supported in making their own decisions, they have greater motivation to manage their diabetes and achieve significant reductions in their HbA_{1c} levels.

4 Empowering people with diabetes to adjust their own insulin dose increases the chances of achieving and sustaining good glycaemic control over months and years.

5 One way to help people with diabetes to learn how to adjust their insulin dose is to develop materials and algorithms for use by the individuals themselves when they first start injecting insulin.