Insulin initiation in type 2 diabetes: Experience and insights

Joan Everett

A diagnosis of type 2 diabetes can be devastating for the individual and their family. Furthermore, many people with diabetes fear insulin initiation, interpreting it as treatment failure and a sign that their condition is worsening (Hunt et al, 1997). However, timely initiation of insulin can help improve outcomes (UKPDS Group, 1998). As more and more people are diagnosed with the condition, nurses can help to improve their quality of life by addressing barriers to insulin initiation and providing education, empowerment and support.

The number of people diagnosed with diabetes continues to rise and, in the UK, has topped 2 000 000 cases (Diabetes UK, 2005).

Tight glycaemic control is important to prevent diabetes complications (UKPDS Group, 1998). With type 2 diabetes, glycaemic control deteriorates over time and, as a result, many people with type 2 diabetes will need to start using insulin at some point, particularly if they are to meet national targets for glycaemic control. NICE recommends a target HbA_{1c} of 6.5–7.5 % (NICE, 2002), while the National Service Framework (NSF) for diabetes defines poor glycaemic control as a HbA_{1c} >7.5 % (DoH, 2001). In the author's experience, the GMS contract appears to be driving more people onto insulin therapy, which has implications for primary care as traditionally, insulin initiation and management has been managed by secondary care.

In primary care clinics, nurses undertake the lion's share of diabetes management, providing support and education to the individual with the condition; contributing to and implementing treatment care pathways; and meeting government targets to achieve a maximum of 99 diabetes-related points in the Quality and Outcomes Framework (DoH, 2004).

Insulin in type 2 diabetes

The UKPDS confirmed the importance of good glycaemic control in reducing microvascular complications of type 2 diabetes but, for most people, this glycaemic control deteriorates with time (UKPDS, 1998). In the UKPDS, 53 % of individuals treated with sulphonylureas required insulin after 6 years; this study showed that when maximum sulphonylurea therapy is inadequate, early insulin initiation can improve glycaemic control significantly

Article points

1. Patient education and empowerment are essential for the successful management of type 2 diabetes.
2. Group insulin initiation provides invaluable peer group support.
3. Engaging people with diabetes in the goal setting process and giving them more control over their treatment can help overcome potential barriers and improve outcomes.
4. Patient-led titration of insulin therapy can lead to significantly improved glycaemic control compared with physician-led titration.

Key words

- Insulin initiation
- Education
- Insulin resistance

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1. Traditionally, insulin has been initiated in secondary care but there is a move towards insulin being started in primary care.
2. A personal care plan that addresses these issues should be agreed with the individual with specific, measurable, achievable and realistic targets.
3. With the advent of long-acting insulin analogues, healthcare professionals can alleviate some of their patients' fears regarding hypoglycaemic events and weight gain.

without increasing rates of hypoglycaemic events or weight gain (Wright et al, 2002).

The usual indications to start insulin are as follows.

- The individual is symptomatic despite maximum oral agents.
- Lifestyle issues of weight reduction and increased physical exercise have been addressed.

There is also the question of whether or not the appropriate medication is being taken at the correct time.

Should insulin be initiated in primary or secondary care?

Traditionally, insulin has been initiated in secondary care but there is a move towards insulin being started in primary care (Gadsby and Spollett, 2003). However, this is dependent upon local management and care pathways. In the author's experience, developments in insulin therapy – including the new insulin analogues – mean insulin can be initiated with greater ease in primary care. In some areas, specialist teams are being developed in the community setting and there is now the option of intermediate care providers (Burden, 2003; Freeman, 2005). However, the most important factor is the provision of healthcare professionals with training, expertise and practical experience of insulin initiation. There are courses available such as Insulin for Life and MERIT (Meeting Educational Requirements, Improving Treatment) that provide educational programmes for primary care healthare professionals.

Before insulin initiation, the individual needs to be assessed to ensure the following.

- Maximum oral agents are being taken at the right time.
- Every effort has been made to help the individual lose weight (it has been shown that a significant weight reduction decreases the need for insulin).
- Physical activity needs to be encouraged to improve insulin sensitivity.

A personal care plan that addresses these issues should be agreed with the individual with specific, measurable, achievable and realistic targets. Technical concerns can be addressed easily by demonstration and practice. Perceived restrictions and a sense of failure should be looked for, and reassurance given. Healthcare professionals need to avoid the promotion of negative attitudes and respond positively to reduce the reluctance of people with diabetes to use insulin.

Perceived barriers of weight gain and hypoglycaemia need to be addressed. Experience has shown that there can be some weight gain but this can be minimised with specific input from a specialist dietician. Gradual increase of insulin plus agreed targets and informed titration of insulin should help in avoiding major hypoglycaemic episodes. With the advent of long-acting insulin analogues, healthcare professionals can alleviate some of their patients' fears regarding hypoglycaemic events and weight gain. People with type 2 diabetes using insulin glargine experienced significantly less nocturnal hypoglycaemia and weight gain than those on neutral protamine Hagedorn (NPH) insulin (Rosenstock et al, 2001).

A second long-acting insulin analogue, insulin detemir, is also associated with a reduced risk of nocturnal hypoglycaemia and weight gain compared with NPH in people with type 1 diabetes (Soran and Younis, 2006).

Treatment options

The ever-increasing range of oral hypoglycaemic agents and insulins provide several options for introducing insulin therapy. A recent Cochrane review of insulin initiation trials looked at a meta-analysis of 20 randomised controlled studies of 1811 participants. Short-term clinical outcomes were compared between insulin regimens and combination therapy in insulin-naïve participants. The overall conclusion was that all regimens achieved similar improvements in glycaemic control, frequency of hypoglycaemia and quality of life during the first few months. However, it should be noted that many of the included studies

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1. It is reasonable to consider the addition of a basal insulin as the preferred option where an early transition to insulin is planned.
2. As glycaemic control deteriorates, rapid-acting insulin may be administered before two and, if necessary, three meals a day to maintain optimal glycaemic control.
3. 41 % of individuals with type 2 diabetes have poor psychological wellbeing that may affect diabetes management.
4. Many individuals are reluctant to start insulin because, to them and others, it means their diabetes has increased in severity.

were of a short duration (Goudswaard et al, 2004).

Based on this review, it is reasonable to consider the addition of a basal insulin as the preferred option where an early transition to insulin is planned. By contrast, where control has deteriorated to an HbA_{1c} >8.5 %, a twice-daily biphasic insulin regimen plus metformin is preferred (Page, 2005).

Recent studies show that when appropriate glycaemic targets are sought with systematic titration of insulin dosages, several methods of initiating insulin may be successful (Riddle, 2005). Starting with a single injection of basal insulin at night may be more acceptable than multiple injections, particularly if one of the new long-acting basal insulin analogues is used. These are associated with less nocturnal hypoglycaemia and weight gain than traditional insulin; combined with metformin or a sulphonylurea, this regimen may be sufficient to achieve and maintain glycaemic control (Rosenstock et al 2001; Soran and Younis, 2006).

When this combination becomes inadequate, individuals can step up to a basal–bolus regimen by introducing one pre-meal injection of rapid-acting insulin before the main meal, in addition to the night-time basal insulin. As glycaemic control deteriorates, rapid-acting insulin may be administered before two and, if necessary, three meals a day to maintain optimal glycaemic control (Barnett et al, 2003). The use of twice-daily pre-mixed insulin is an alternative to a basal–bolus regimen for individuals who have regular lifestyles and eating patterns.

How to overcome barriers to insulin initiation

The psychological status of people with diabetes should be taken into account: 41 % of individuals with type 2 diabetes have poor psychological wellbeing that may affect diabetes management (Peyrot et al, 2005).

Many individuals are reluctant to start insulin because, to them and others, it means their diabetes has increased in severity. Similarly, if healthcare professionals use insulin as a threat to promote compliance with oral therapy, it can create psychological barriers to starting insulin. Other barriers to insulin initiation relate to the need for frequent injections. These are often perceived as painful, difficult to administer and having the potential to result in hypoglycaemic episodes and weight gain (Heinemann, 2004). There is often psychological insulin resistance due to fear of insulin therapy. Of primary importance is addressing the following educational issues:

- Helping people with diabetes understand why glycaemic targets are important.
- What health risks they face if glycaemic targets are not met.
- Insulin's ability to help individuals achieve and maintain glycaemic control as their condition progresses is something to be revered rather than feared.

Morris et al (2005) studied the experience of people with type 2 diabetes who had switched from oral medication to self-administered insulin. Reported were initial reactions of shock, fear of injections, fear of causing harm to themselves, powerlessness and anger. However, all the study participants expressed relief that the injections were not as painful as anticipated. The way people coped with starting insulin related to whether they viewed insulin as a 'friend' or 'foe'. Most people believed that insulin would restrict their lifestyles and there was a strong sense of failure in needing insulin.

Morris and colleagues' study also found that there was eventual acceptance of insulin that began when perceptions of the medication altered from 'foe' to 'friend'. There was a sense of empowerment with the confidence gained from giving and managing injections and this resulted in reduced blood glucose levels. Confidence also increased with education and adjusting insulin doses. These findings are confirmed by a recent study in which people with type 2 diabetes who were following a simple self-titration algorithm significantly improved glycaemic

control compared with controls whose titration was managed by their GP. This has the potential to reduce the demand on healthcare professionals' time and also, more importantly, empowers people with diabetes to take a leading role in the management of their condition (Davies et al, 2005).

Engaging people with diabetes in the goal-setting process can help them overcome potential barriers, and giving them more control over their treatment can improve outcomes. A comparison of two treatment algorithms for people with type 2 diabetes treated with insulin showed that those who titrated their own insulin therapy according to a simple algorithm experienced significantly improved glycaemic control compared with those whose insulin titration was controlled by their physician. Both groups administered insulin glargine as their daily basal insulin and there was no significant difference in the incidence of severe hypoglycaemia between the two groups (Davies et al, 2005).

An earlier study found that positive attitudes towards insulin injections focused on efficacy and efficiency, avoiding complications and feeling better. Negative attitudes focused on technical concerns (anxiety about pain, general hassle of injecting, hypos and concern about insulin) and concerns about the condition increasing in severity, failure of past treatments and blaming themselves for insulin requirement (Hunt, 1997).

What education should be given?

Education for people starting insulin therapy is essential and can be instrumental in altering perceptions of insulin. This education needs to take place prior to, during and after insulin initiation. Indeed, NICE recommends that all people with diabetes should be provided with high-quality, structured education (NICE, 2003) and all centres should be working towards providing education that meets the DoH criteria set out in 2005 (DoH, 2005).

Group or individual education?

A recent survey showed that 40 % of diabetes centres in North West England offer group starts and 60 % offer individual insulin starts (Wallymahmed, 2005). The usual justification for use of group sessions is the more effective use of resources. The disadvantages relate to meeting the needs of the individual, different learning styles and learning pace. A major issue that was identified with regard to the issue was lack of training in facilitating groups. This area needs to be addressed as it is important in all patient education. Another important reason for group insulin starts is the peer support that it can offer participants. Often, issues are discussed that would never surface in an individual appointment. It is reassuring for people with diabetes to discover that other people have the same fears and barriers. Good facilitation skills on the part of the healthcare professional running the session can address these issues.

Treatment satisfaction and quality of life

Type 2 diabetes treatment outcomes ultimately depend on the individual and their ability to make long-term behavioural changes that support good self care and metabolic control (Skinner, 2004). Depression, stress and anxiety are further obstacles to optimum self care and attainment of clinical goals. Healthcare professionals should endeavour to understand and accommodate these issues when setting treatment goals and developing plans to achieve them.

The Diabetes Treatment Satisfaction Questionnaire (DTSQ) has shown improved patient satisfaction with insulin analogues over traditional insulins (long-acting insulin glargine versus NPH insulin and fast-acting insulin lispro over standard soluble insulin). Nonetheless, a diabetes-specific quality of life measure shows that diagnosis of diabetes is detrimental to quality of life, impacting negatively on all meaured quality of life domains, in particular the domain 'Freedom to eat as I wish', illustrating the effect of dietary restrictions on quality of life. The negative impact on quality of life is amplified in individuals with diabetes complications (Bradley and Speight, 2002).

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Conclusion

Converting people with type 2 diabetes to insulin requires practical, technical and empowering skills. The purpose of diabetes nursing is to make a difference to the lives of people with diabetes. The quality of life of individuals needing insulin can be improved by addressing both clinical and psychological concerns. ■

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