

Improving glycaemic control in adolescents with type 1 diabetes

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Introduction

Adherence to treatment is necessary to prevent the risk of the severe and often devastating complications associated with diabetes. However, adherence is not easily maintained in adolescents due to the many issues attributable to their stage of development. This article aims to explore methods which can be used to improve glycaemic control in this group. The skills and resources required by a DSN to encourage and enable such a change are discussed.

The issues surrounding poorly controlled diabetes in adolescence have been the frequent focus of research and discussion (Skinner et al, 1999; Carson, 2003). It is widely understood that poor control of blood glucose during adolescence is exacerbated by psychosocial factors (Newton et al, 2000), in addition to the physiological and behavioural changes that arise as a result of puberty (Thompson and Greene, 1997).

Negotiating realistic goals and developing a trusting relationship are of fundamental importance for adherence to treatment when caring for adolescents with diabetes. Non-adherence to treatment is potentially harmful, although adolescents may not perceive it in such a way. They may consider the long-term risks as less important than the intrusiveness of caring for their diabetes in the present. Coping mechanisms vary between individuals. The adolescent with an internal locus of control will benefit from different interventions than an adolescent with an external locus of control (Sarafino, 1994). Interventions must be multifaceted and applicable to varying personalities.

Tailoring of treatments to the patient's locus of control and/or behavioural patterns has been acknowledged as beneficial for some time (Cromwell et al, 1977). The primary issue to consider is how a healthcare professional can implement a change in behaviour for a group who are known to be non-compliant.

The morbidity and mortality associated with poor control of diabetes, and its inevitable consequences on the quality of life of adolescents with diabetes motivate healthcare professionals to help improve the glycaemic control of this particularly challenging group. The attainment of at least awareness of the importance of glycaemic control is essential; the provision of appropriate education, equipment and support are necessary in order to achieve this awareness. However, achieving and maintaining contact with adolescents can be difficult, and clinic attendance is often poor.

Rationale for intervention

Improvement of glycaemic control is a priority in the care of people with type 1 diabetes (DCCT Research Group, 1994). Research indicates that microvascular disease starts early in childhood diabetes (Elhadd et al, 1997). Improvement of glycaemic control can delay the onset and progression of microvascular and macrovascular complications (DCCT Research Group, 1994).

The optimal glycaemic level as recommended by the DCCT in 1993, is an HbA_{1c} of <6.05%. How appropriate such a goal is when the focus of the discussion is adolescents and their quality of life is of significance, especially when one analyses the methods employed during the DCCT and the subsequent quality of life of the participants.

ARTICLE POINTS

1 To improve an aspect of care for a patient group, the intervention must be multifaceted and applicable to varying personalities.

2 Adherence to treatment is essential in order to prevent the risk of complications associated with diabetes.

3 Credibility, enthusiasm and an insight into living with type 1 diabetes are essential attributes of a paediatric diabetes specialist nurse.

4 A fundamental factor that can promote good control of diabetes in adolescence is support provided by family, peers and healthcare professionals.

5 Nurse-led clinics, and an out-of-hours service for advice and support can be developed by healthcare professionals.

KEY WORDS

- Adolescents
- PDSN
- Support
- Education

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1 Each adolescent with diabetes should be provided with appropriate resources and education on the need for their blood glucose to be regularly monitored.

2 Credibility, enthusiasm and an insight into living with type 1 diabetes are attributes of a PDSN that are desired by young people.

3 The PDSN should be willing to negotiate realistic goals with the adolescent and communicate on their level.

4 A fundamental factor that can promote good control of diabetes in adolescence is support, provided by family, peers and healthcare professionals.

5 An innovative research study showed that greater social support and peer support were associated with improved metabolic control (Skinner et al, 1999).

Howell et al, 1997, and Dyrlov et al, 2000, outline the aims of interventions as being to:

- Improve the adolescent's acceptance of their diabetes and its tasks.
- Increase the self-sufficiency, self-efficacy and self-confidence of the adolescent.
- Educate people with diabetes, families and peers.
- Include the needs of special groups, such as those with learning difficulties.
- Inform and involve the patient's family and peers about diabetes and improve their skills and knowledge.
- Use families' support to secure commitment and adherence to treatment plans.

Improvement of glycaemic control

It is suggested that better glycaemic control can be achieved if the following aspects of care are introduced:

- Re-educating about the need to monitor blood glucose.
- Enabling the adolescent to monitor their blood glucose by ensuring that adequate equipment and information is provided.
- Support of the adolescent by regular contact and development of family and peer support groups so that they become empowered (if they wish) to care for their diabetes.

Each adolescent with diabetes should be provided with appropriate resources and education on the need for their blood glucose to be regularly monitored, and to know how to react to sub-optimal blood glucose readings, in order to gain optimal control. In adolescence, motivation, support and education help to achieve glycaemic control (Dyrlov et al, 2000).

The role of the paediatric diabetes specialist nurse

The paediatric diabetes specialist nurse (PDSN) is perceived to have a pivotal role in the care of adolescents (Carson, 2003). However, it is not just PDSNs who work with adolescents with diabetes. DSNs and other general nurses provide care for adolescents with diabetes. Whatever the nursing role, credibility, enthusiasm and an insight into living with type 1 diabetes



Figure 1. A friendly and trusting relationship can develop between the adolescent and the PDSN

are attributes that are desired by young people. These are characteristics deemed as fundamental to such a post holder (Lowe, 1997). Along with continuity, these facets can enable a friendly, trusting and long-term relationship to be developed between the PDSN and the adolescent (Newton et al, 2000) as shown in *Figure 1*.

The PDSN should be willing to negotiate realistic goals with the adolescent and communicate on their level (Dyrlov et al, 2000). Participation in social events such as diabetes camps have proved to be beneficial in developing a good rapport with young people with diabetes.

Support

A fundamental factor that can promote good control of diabetes in adolescence is support, provided by family (Burroughs et al, 1997), peers (Skinner et al, 1999; McEvilly, 2003) and healthcare professionals (Bergental et al, 1996).

An innovative (albeit small) research study showed that greater social support and peer support were associated with improved metabolic control (Skinner et al, 1999). These researchers acknowledged the adverse effect on metabolic control and quality of life that arises if adolescents do not receive peer support. The benefits associated with the development of peer and family support have also been recognised (Dyrlov et al, 2000). Therefore, the instigation of monthly evening meetings where adolescents, family and friends

can meet and discuss issues informally is advocated.

Programmes can be developed to increase support and education of the adolescent with diabetes. These include nurse-led diabetes clinics and the provision of an out-of-hours on-call service for advice and support. Such services enable the PDSN to have regular contact with the patient, their family and peers, in order to educate on the need to monitor and how to react to results.

Education

Education should be combined with support in an attempt to improve adherence to regimens and improve glycaemic control. Dyrlov et al (2000) found that appropriate education of the person with diabetes (based on their age and need) and their family, and support from the multidisciplinary team, are the key issues to facilitate successful management of diabetes. This was further reflected by the prevention of complications.

The need to educate the adolescent, their family and peers on the basic task of administering the prescribed dose of insulin is vital. Research has indicated that a significant amount of insulin is omitted by an equally significant number of patients each year. Additionally, the patients with a lower adherence index and poorer glycaemic control were aged 10–20 years (Morris et al, 1997).

Group education enables a number of patients to be taught at one time, which not only makes good use of resources but encourages participation and sharing of experiences, ideas and knowledge. Group education is advocated (Morrison et al, 2003) and in the Royal Devon and Exeter Healthcare Trust, peer theatre is about to be introduced. This will be facilitated by healthcare professionals, but led by peers. This enables aspects of diabetes management to be taught to young people through interactive and fun group work. However, it must be acknowledged that group work is not appropriate for everyone; individual education through such avenues as nurse-led clinics should continue to be offered.

Education about testing and self-care

should not be the sole approach to this problem; alternative support strategies can be included when approaching the problem of poor glycaemic control in adolescence (Newton et al, 2000).

Nurse-led clinics

Inviting adolescents to nurse-led clinics is one way of providing education and support for adolescents with diabetes. Personal experience has proved positive, as at the Royal Devon and Exeter Hospital, paediatric and adolescent nurse-led diabetes clinics were introduced in 2002. A local audit of our caseload of approximately 120 young people with diabetes and their parents revealed dissatisfaction with clinic waiting times, both during clinic and between appointments. These problems evolved due to pressures of an increasing caseload. The outcome of the patient satisfaction questionnaire used in the audit was that the nurse-led clinics would be well received if they were used in addition to consultant-led clinics. These clinics enable the PDSN to focus on patients with poor control and poor attendance, which frequently go hand in hand. Additionally, the PDSN provides the patient with the most appropriate equipment to encourage blood glucose monitoring.

Although it is too early to assess the outcome of the introduction of nurse-led clinics, the PDSNs running the clinics have acknowledged that the time spent with patients has proved advantageous, in a similar way to the work of Loftus and Weston (2001). These clinics have prompted discussion and raised the opportunity for education about issues relevant to their age group. Due to embarrassment, adolescents may be reluctant to discuss issues such as sex, alcohol and drug use in the consultant-led clinic. It has also facilitated the encouragement of monitoring of blood glucose and appropriate reaction to the results obtained.

The rapport of the PDSN with the adolescent appears to encourage their clinic attendance, which may continue once they transfer to the adult service. Non-attendance once an adolescent's diabetes care is transferred to the adult service is a problem acknowledged both locally and

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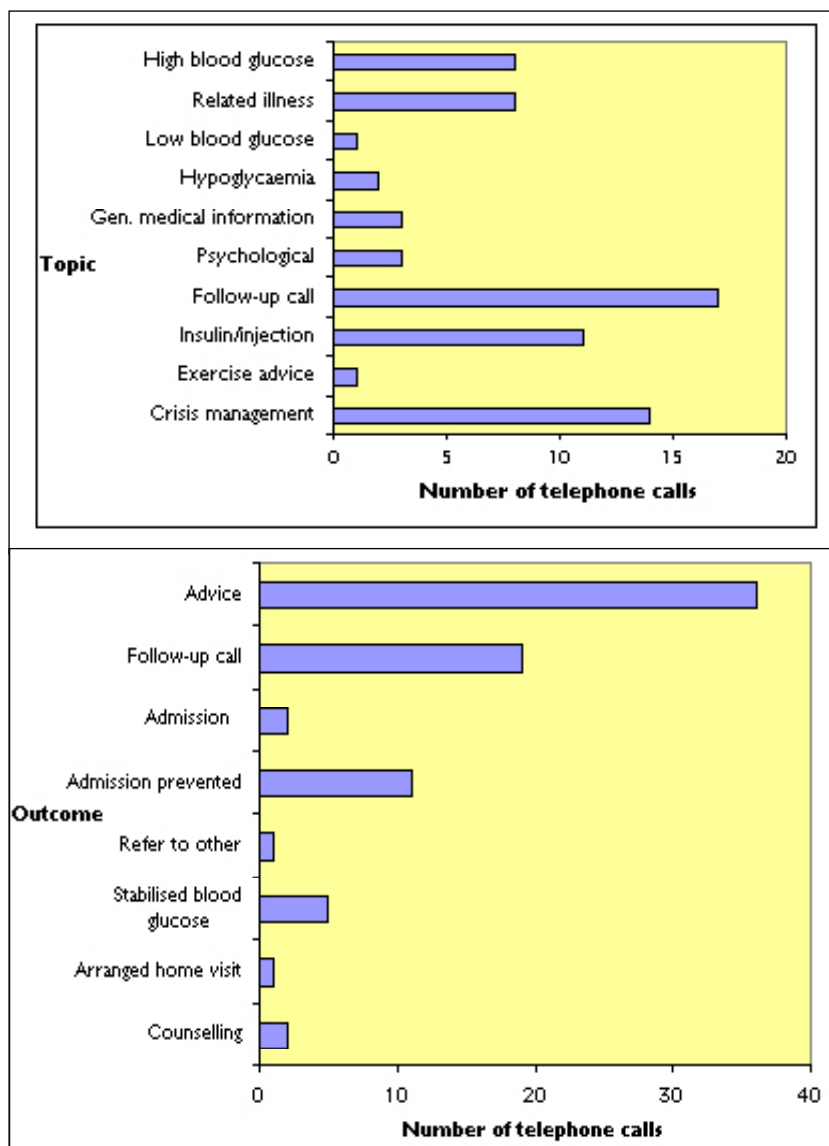


Figure 2. Use of the out-of-hours telephone service

necessity and feasibility of strict glycaemic control in most children and adolescents (Tamborlane and Grey, 2000). Research has revealed that complications increase with HbA_{1c} values above the range for people without diabetes (Herman, 1999). It would appear pertinent to continue with a very positive opinion of the need for blood glucose monitoring (Newton et al, 2000).

Home visits/telephone contact/text messaging

Support from regular home visits, telephone contact and text messaging could prove beneficial. McEvelly (2003) acknowledged that adolescents benefit from such opportunities.

Out-of-hours on-call service

An on-call telephone service enables the young person to contact their PDSN to talk about confidential issues, which they may not wish to discuss in front of their parents at clinic appointments or during home visits. An out-of-hours on-call service for telephone support and advice has been provided at the Royal Devon and Exeter Healthcare NHS Trust for several years. The service is provided by two PDSNs year-round from 0800–2000, 7 days a week. A recent audit of calls received by the PDSN both during and outside of working hours revealed that the out-of-hours service was well used for a variety of reasons. The calls received and made by the PDSN over a 3 month period were audited (see Figure 2).

The most significant outcome was the reduction of hospital admissions, which reduces the financial burden of inpatient care. The service also facilitates patient education. Such encouragement of partnership in decision-making and provision of support is advocated by the NSF (DoH, 2001), as is the provision of an out-of-hours service. However, such service provision comes at a price; the origin of funding remains an issue and PDSNs can find providing such an intense service demanding.

Conclusion

In order to achieve optimal glycaemic control (on an individual level) the education

nationally (Carson, 2003). The National Service Framework for Diabetes (DoH, 2001) advocates the smooth transition of care to the adult service. Maintaining regular contact with these young people is an essential part of the process and is beneficial.

Alternative insulin treatments which have the potential to make the lifestyle of the adolescent more flexible can be explored in nurse-led clinics (Jones, 2002). This would hopefully result in adherence to treatment and lower current unsatisfactory HbA_{1c} values to within optimal levels, as appropriate to each individual.

Research has revealed a correlation between frequency of blood glucose monitoring and improved glycaemic control (Bergental et al, 1996; Evans et al, 1999). However, researchers have questioned the

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1 Alternative insulin treatments which have the potential to make the lifestyle of the adolescent more flexible can be explored in nurse-led clinics.

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and support of adolescents with diabetes must continue. Support from families, peers and healthcare professionals is beneficial in motivating and encouraging young people in self-managing their diabetes (Dyrlov et al, 2000).

The Royal Devon and Exeter Healthcare Trust uses education and support in conjunction with nurse-led clinics, a PDSN-led out-of-hours on-call service and a smooth transition of care to the adult service. These approaches will hopefully result in improvement of quality of care and health outcomes for adolescents. However, if clinic attendance and PDSN contact is inadequate, then group patient education programmes as advocated by NICE (NICE, 2003) would be a great opportunity for patient education. An alternative would be the introduction of nurse-led drop in clinics outside of normal working hours, proposed by McEvelly (2003) and found to be popular with adolescents. However, financial resources would first need to be secured.

The adoption of such strategies nationally could prove to be hugely beneficial approaches to consider when caring for children and adolescents with diabetes, in order to improve the long-term health outcomes of this high impact, high cost disease. ■

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