



A pilot study comparing a type 1 nurse-led diabetes clinic with a conventional doctor-led diabetes clinic

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Introduction

Type 1 diabetes results from an absolute insulin deficiency and currently requires subcutaneous insulin therapy to control blood glucose concentrations.

The complications of diabetes are well known and include microvascular disease and macrovascular disease. Microvascular complications (retinopathy, nephropathy, neuropathy) lead to significant disability and death. Macrovascular complications (cardiovascular disease, coronary heart disease, peripheral vascular disease) are responsible for 65% of diabetes-related deaths.¹ Overall life expectancy is reduced by an average of 20 years in people with type 1 diabetes.² The highest costs in diabetes care are incurred by the treatment of microvascular and macrovascular complications.³

The challenge of the St Vincent Joint Task Force⁴ was to reduce the costly complications of diabetes,

Abstract

A prospective comparative pilot study was designed to assess and compare care delivered by a diabetes specialist nurse (DSN) and standard doctor-led care for patients with type 1 diabetes. The philosophy was to provide an individualised, patient-centred, lifestyle-based approach.

In all, 60 patients with type 1 diabetes were randomised to either the nurse-led clinic (NLC) or a conventional clinic. NLC patients received medical input during their annual screening appointment.

In the nurse-led system patients prioritised relevant issues with the aid of a 'Waiting Area Menu'. The menu consisted of pertinent topics relevant to living with diabetes. Care interventions were then agreed and targets discussed.

To date the results of DSN intervention include: 60% of patients changing to a more appropriate insulin regimen; 36% changing equipment following update from the DSN; 20% needing initiation of cardiovascular medication; and 26% being referred to other health care professionals. The mean HbA_{1c} changed by -0.25% in the NLC group and by -0.06% in the control group (ns).

During the pilot there were several barriers which we had not anticipated. These included staffing resources, and organisational and time management issues. However, feedback from patient questionnaires demonstrated that the majority of patients preferred the NLC. Copyright © 2004 FEND.

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Key Words

type 1 diabetes; glycaemic control; quality of life; nurse-led clinics; patient-centred; lifestyle-based care

both economically and in terms of human suffering. The Scottish Intercollegiate Network Guidelines⁵ provide evidence-based guidelines aimed at improving diabetes care. It is well established that good blood glucose control can prevent or delay the onset of these complications.^{6–8} Furthermore, the Audit Commission Report⁹ confirms that poor diabetes control not only increases the risk of complications, but can also have a serious impact on psychological and physiological well-being.

Diabetes is a complex disease, involving varying medication over time, surveillance of complications and lifelong self-care regimens.

Anderson¹⁰ provides an excellent description of diabetes care: 'A complex mesh of social, emotional, cultural, psychological and demographic fabric woven into the patient's life.'

Patient education is believed to be one of the cornerstones of diabetes care. Essential components of good care also include the provision of support, coping strategies, empathy, understanding regarding living with diabetes, and advice on maintaining good diabetes management in varying conditions.

Aims

The aims of this study were to evaluate by questionnaire patients'

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experience of attending a nurse-delivered clinic compared to a standard doctor-led diabetes clinic. This study sought to explore the belief that a diabetes specialist nurse (DSN) working in the nurse-led clinic (NLC) structure would address lifestyle issues which would be effective in improving glycaemic control, clinic satisfaction and quality of life. The literature in this particular area was found to be scarce at the time of writing this report.

Methods

Patients with type 1 diabetes normally attend a hospital diabetes clinic each four or six months. At the clinic they have blood taken and eye screening when required, and see a trained physician with an interest in diabetes. HbA_{1c}, lipids, renal function and microalbumin results are available at the time of the clinic. As three or four different doctors work in the clinic at any one time, patients may not see the same doctor at each visit. DSN and dietetic referral are available at the physician's discretion.

Initial phase

In total 60 patients were randomly recruited from the diabetes clinic database (i.e. of registered patients). Those who agreed to take part in the study were randomly assigned to either the NLC or standard care. Randomisation was undertaken by using a random number table. Thirty patients were assigned to each group. Despite this method, HbA_{1c} was significantly higher in the control group at the start of the study ($8.9 \pm 1.3\%$ [SD] in the control group, and $8.2 \pm 1.2\%$ in the NLC group [t test $p < 0.05$]).

The guidelines drawn up for the first consultation and follow-up consultations with the DSN were decided following discussion with the physician (diabetologist), DSN's, research nurse and clinical

Thank you for attending the clinic

We would like to help with the issues that matter most to you. Please look at this list. Is there anything here you would like to talk about today?

- | | |
|---|---|
| <input type="checkbox"/> eating out and alcohol | <input type="checkbox"/> adjusting insulin doses |
| <input type="checkbox"/> work and diabetes | <input type="checkbox"/> eyesight |
| <input type="checkbox"/> driving and diabetes | <input type="checkbox"/> complications of diabetes |
| <input type="checkbox"/> sport and exercise | <input type="checkbox"/> pregnancy and diabetes |
| <input type="checkbox"/> hypos | <input type="checkbox"/> feeling anxious or depressed |
| <input type="checkbox"/> blood sugar control | <input type="checkbox"/> blood glucose testing equipment |
| <input type="checkbox"/> looking after your feet | <input type="checkbox"/> sexual health (including impotence) and diabetes |
| <input type="checkbox"/> things I once knew – revision | <input type="checkbox"/> travel and holidays |
| <input type="checkbox"/> gaining weight and losing weight | <input type="checkbox"/> how we could improve the clinic |
| <input type="checkbox"/> psychology for health | |
| <input type="checkbox"/> insulin pens and needles | |

Is there anything else?

Figure 1. The Waiting Area Menu

psychologist. Consultations also adhered to the Scottish Intercollegiate Guidelines⁵. The content of the consultations were as follows:

Content of the first consultation with the DSN

1. Assessment: the DSN will learn more about the patient's background/lifestyle/attitudes/coping methods/support structures
2. Clinical investigations: HbA_{1c}, BP and weight
3. Review of current insulin regimen and insulin doses
4. Equipment review (blood glucose meter, injecting device, insulin pen and needles)
5. Hypoglycaemia/hyperglycaemia history
6. The lifestyle-based approach of the clinic includes patients choosing issues relevant to themselves with the help of a 'Waiting Area Menu' (see Figure 1)

7. Education: the DSN will assist patient empowerment through discussion and provision of information

8. Setting goals: agreed goals between the patient and the DSN

9. Follow up: agree next review, and decide on any intermediate support and/or feedback required (e.g. HbA_{1c}, telephone contact).

Follow-up consultations with the DSN

- Clinical investigations: HbA_{1c}, BP and weight
- Review: discuss goals previously set and any progress made
- Referral: where appropriate the DSN will refer to other members of the diabetes team
- Repeat of items 6 to 9 of the first consultation process.

Patients were also reviewed annually by a physician for their screen for diabetes complications.

The clinics were run by the



Intervention	Patient percentage (n=30)
Insulin regimen change	60%
Equipment update Blood glucose meter Injecting device Insulin pen needles	36%
Cardiovascular medication initiation	20%
Referral to other health care professionals • Dietitian • Podiatrist • Psychologist	26%

Table 1. Results from DSN intervention

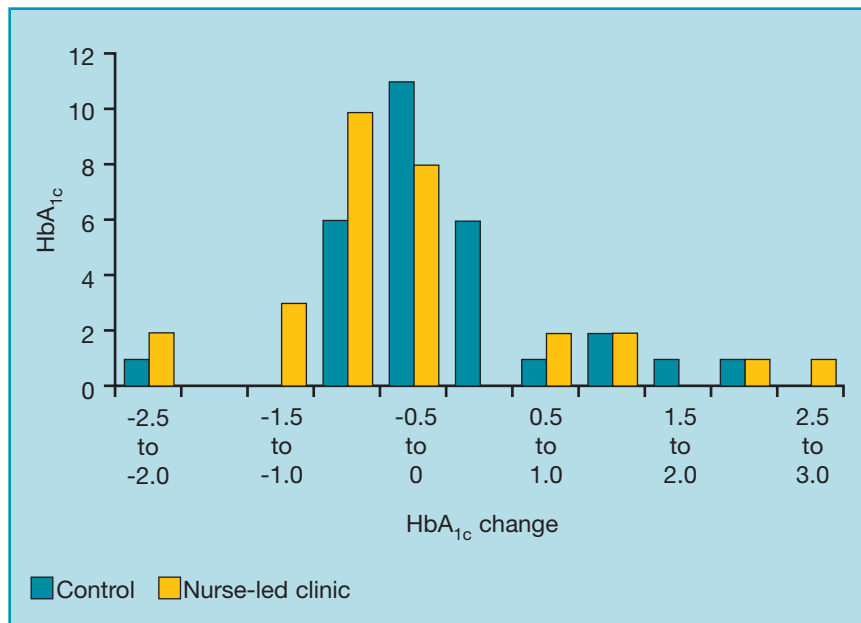


Figure 2. Change of HbA_{1c} in each group

DSN's, while the administration was dealt with in part by the research nurse. The study was run over a period of 18 months and comprised 26 clinics.

The patients were asked to feedback their comments on the clinics anonymously by questionnaire. Questions were asked about the advantages of the NLC as well as problems encountered, patients were also asked if they wished to continue with NLC care and if they had any other comments.

Results

Patient feedback

The anonymous patient questionnaire was responded to by a total of 67% of patients who replied by post (33% of the patients did not respond). Patients' comments are summarized in Table 2. The outcome of the patient feedback showed that 95% of the patients who responded would like to continue attending the NLC. One patient commented: 'You can't give someone something better than they're used to, then take it away.'

Lessons learnt

- The necessity of incorporating the multidisciplinary team in the early planning stages
- The need for agreed, dedicated personnel to assist with the clinic organisation – i.e. receptionist, phlebotomist, clinic nurse, secretary and medical staff support. The NLC was found to be understaffed in general, which contributed to each of the barriers mentioned.
- Protected DSN time to dedicate to the NLC
- A computerised appointment system – essential from the start
- Development of a database to enable easier access to the results
- Regular updates on study progress, and the opportunity to highlight problems
- Designated diabetologist to discuss cases at the end of the clinic.

The results arising from DSN intervention are shown in Table 1. Figure 2 gives the data regarding the HbA_{1c} change in each group.

Future plans

The DSNs have experienced frustration caused by the barriers that are positively described above, as 'lessons learnt'. To describe the DSNs as 'Jacks of all trades' possibly sums up their role in the NLC. However, patients have expressed their satisfaction with this clinic and would like to see it continue. Doctors are equally keen to continue this study, and we are currently negotiating strategies which incorporate our lessons learnt to avoid previous problems.

Conclusion

The chronic nature of diabetes, the absence of a cure, the risk of complications and the treatment requirements all place considerable demands on patients. As well as providing education for patients, it is critical to provide support and cop-



Comment	Patient percentage (n=67)
Advantages	
• Improvements in care through an individualised, patient-centred, lifestyle-based approach	100%
• Benefits of a less formal atmosphere	70%
• Continuity of care, i.e. same nurse every visit	82%
• Less waiting time	56%
• Flexible appointment times	17%
Disadvantages	
• Poor organisation of appointments	39%
• Difficulty in contacting the DSN outwith the NLC	30%

Table 2. Results of patient feedback commenting on the advantages and disadvantages of an NLC

ing strategies. The management of diabetes involves a team approach. This team must include the patient. A nurse-led diabetes clinic – designed to provide a patient-centred supportive approach to the management of diabetes with improved continuity of care compared to most diabetes clinics – was found by patients to produce significant benefits. Patients appreciated the lifestyle-based approach, the less formal atmosphere, the greater continuity of care and the more flexible appointment times. This approach can therefore be recommended. There may also be other methods which can be implemented to improve patient experience at standard clinics.

HbA_{1c} did not change significantly between groups. The mean

difference in the NLC group was -0.25% and -0.06% in the control group. The fact that, despite rigorous randomisation, the nurse-led group started with a lower HbA_{1c} than the controls may have decreased the chance of finding a significant HbA_{1c} improvement in this group.

This study has also identified a number of potential barriers to the provision of this service. These barriers were mainly organisational and we would recommend that these should be addressed in advance if others are to set up similar systems of care.

References

1. Nathan D. The epidemiology of cardiovascular disease in type 2 diabetes mellitus: how sweet it is ... or

is it? *Lancet* 1997; **350**(Supp 1): 4–9.

2. Department of Health. *National Service Framework for Diabetes: Standards*. London: DoH, 2001.
3. Scottish Executive. *Scottish Diabetes Framework Edinburgh*. Edinburgh: HMSO, 2000.
4. Diabetes care and research in Europe: The St Vincent declaration. *Diabetic Med* 1995; **7**: 360.
5. Scottish Intercollegiate Guidelines Network. *SIGN 55*. Royal College of Physicians Edinburgh, 2001.
6. Diabetes Control and Complications Trial Research Group. The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependant diabetes mellitus. *N Engl J Med* 1993; **329**(14): 977–985.
7. UK Prospective Diabetes Study (UKPDS). Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes. *BMJ* 1998; **317**: 703–713.
8. ADA Position Statement. Standards of medical care for patients with diabetes mellitus. *Diabetes Care* 2001; **24**(Suppl 1): 533–543.
9. Audit Commission. *Testing times: a review of diabetes services in England and Wales. Briefing paper 12th April*. London: Audit Commission, 2000.
10. Anderson RM. Patient empowerment and the traditional medical model. A case for irreconcilable differences? *Diabetes Care* 1995; **18**(3): 412–415.

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