Impact of having a DSN working in the diabetic eye screening clinic

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Introduction

Given that most patients with uncomplicated type 2 diabetes are managed in primary care, and that diabetes is increasing in incidence, there is a need to establish links with secondary care to ensure assistance with service provision. This article describes a research project in which a DSN from secondary care, working alongside the eye team in a hospital diabetic eye screening clinic, was able to review patients from primary care and, where necessary, liaise directly with the GP in deciding care pathways, to the benefit of both patients and staff.

ARTICLE POINTS

1 In this research project a DSN from secondary care worked alongside the eye team in a hospital diabetic eye screening service run by ophthalmologists.

2 The DSN measured patients' BP, HbA$_{1c}$ and cholesterol, and discussed with them the results and any other concerns they had.

3 Patients valued the opportunity to gain access to specialist advice in one visit to the eye screening clinic.

4 The DSN was able to liaise with the patient's GP in deciding care pathways.

5 Communication between primary and secondary care was enhanced, to the benefit of patients.

KEY WORDS

- **Diabetic eye clinc**
- **DSN**
- **Patient education**
- **Care pathways**
- **Primary and secondary care**

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Since the majority of patients with uncomplicated type 2 diabetes are managed within primary care, and the prevalence of diabetes – particularly type 2 diabetes – in the UK is rising (Amos et al, 1997), demand for primary care diabetes services is obviously going to increase. There is therefore an urgent need to establish pathways between primary and secondary care to ensure assistance with the provision of services to people with diabetes.

These facts were highlighted in the *National Service Framework (NSF) for Diabetes: Standards* document (Department of Health, 2001). Now that we have the diabetes NSF delivery strategy, we should be discussing how to put these standards in place. Aspects that are particularly relevant to DSNs include:
- Clinical care for the person with diabetes is best delivered locally, provided that quality of care can be maintained
- Communication between primary and secondary care needs to be improved.

Aims of the project

The West Suffolk Hospital has a diabetic eye screening clinic which is run by the ophthalmologists. All GPs in the catchment area can send patients with diabetes who are registered with their practice to this clinic, which will then arrange regular ophthalmological review.

Traditionally the hospital diabetes services have had no input into these community-managed patients or the diabetic eye screening service. With the NSF standards in mind, a DSN from the West Suffolk Hospital (DS) embarked on a research project to investigate the impact of having a DSN working alongside the eye team in the diabetic eye screening clinic.

Dr John Clark instigated this project and liaised directly with the ophthalmologists. His reason for setting up the project was to determine the level of diabetes control and blood pressure and cholesterol levels in these community-managed patients. After gaining agreement with the ophthalmologists the DSN set up the consultation with the eye clinic sister.

The aims were to see whether it was possible to establish care pathways with GPs and so relieve pressure on primary care services, to educate patients in self-management of diabetes, and to improve communication between primary and secondary care.

Background

A search of the National Research Register and Cochrane, MEDLINE and CINAHL libraries was performed using the terms diabetes, eye screening, diabetes nurse working in diabetes eye screening clinics, and retinal clinics. No research projects or articles relating to the impact of a DSN working alongside other health professionals in diabetic eye screening clinics were found.

Table 1. Measurements taken at the patient interview and subsequent action

Measurement	Target range	Action
Blood pressure	≤140/80 mmHg	DSN discussed result with the patient, and suggested a recheck with GP or practice nurse if it was high
Glycated haemoglobin	HbA_{1c} <7%	DSN discussed result in terms of diabetes control with the patient and suggested possible changes in diabetes treatment
Cholesterol	*If patient has ischaemic heart disease:* total cholesterol <5.0 mmol/litre LDL cholesterol <3.0 mmol/litre *If patient is fit:* total cholesterol <7.0 mmol/litre	DSN discussed result with the patient, and where appropriate discussed statin therapy and advised the GP to commence medication
All results were communicated to the GP via letter		

Methods

Arrangements were made for the DSN to attend the twice-weekly diabetic eye screening clinic.

For the purpose of this research project the DSN selected all patients from primary care (as the current HbA_{1c}, blood pressure and total cholesterol status of her patients in secondary care were already known to her). On arrival at the clinic these patients were given a letter asking for their participation in the project, explaining that the DSN would be able to measure and inform them of their blood pressure, HbA_{1c} and total cholesterol readings.

After verbal consent was obtained, the purpose of the project was outlined, and a sitting blood pressure followed by fingerprick blood samples for HbA_{1c} and total cholesterol were obtained. The results of these tests were available for discussion with the patient within 6 minutes.

Patient interviews

After obtaining the measurements, the DSN took a history from the patient regarding their current medication and treatment for diabetes (Table 1).

Thereafter the interview was very much patient led, e.g. the DSN might discuss with the patient what he/she knows or understands about diabetes. Other subjects discussed include healthy eating, method and timing of diabetes treatment, reason for and importance of home monitoring of blood or urine glucose, exercise, fear and treatment of hypoglycaemia, smoking cessation and complications of diabetes. The interview length varied from 20 to 45 minutes.

The project commenced in May 2000 and was completed in January 2002. In total 367 primary care patients were seen. For the purpose of this study the results of the first 200 have beeen collated.

The number of patients that the DSN was able to interview varied from three to eight per clinic session; the number was dependent on the number attending the clinic, agreement to see the DSN and the ratio of primary and secondary patients per clinic. Obtaining the measurements at the start of the session gave the DSN maximum time to discuss diabetes and then reflect on the findings. The results were then available for the ophthalmologists.

Of the first 200 patients seen, 26 declined to see the DSN. Although she was targeting patients from primary care, all patients were aware of her attendance via the clinics information board and were seen upon request.

At the end of the interview, the DSN discussed the results of the blood pressure, HbA_{1c} and cholesterol measurements with the patient, and gave him/her a letter with the results and target ranges.

PAGE POINTS

1 A DSN attended the twice-weekly diabetic eye screening clinic.

2 The DSN measured patients' blood pressure, HbA_{1c} and cholesterol levels and discussed the results with them at the end of the interview.

3 Obtaining the measurements at the start of the session gave the DSN maximum time to discuss diabetes and then reflect on the findings.
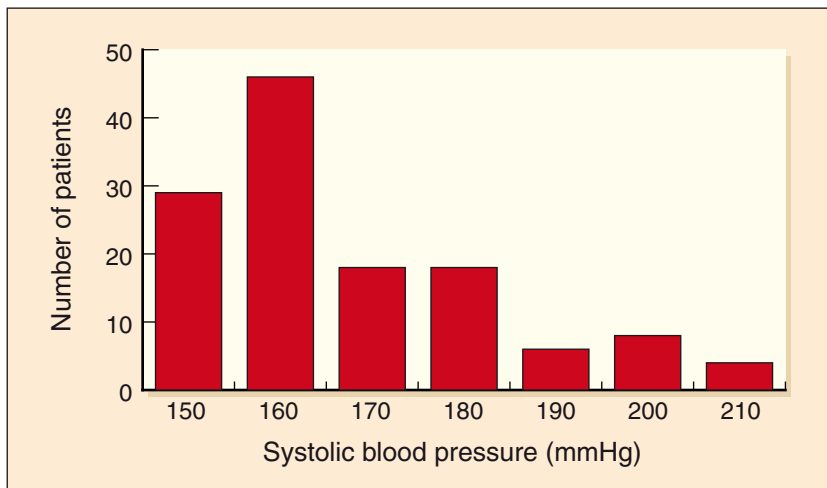
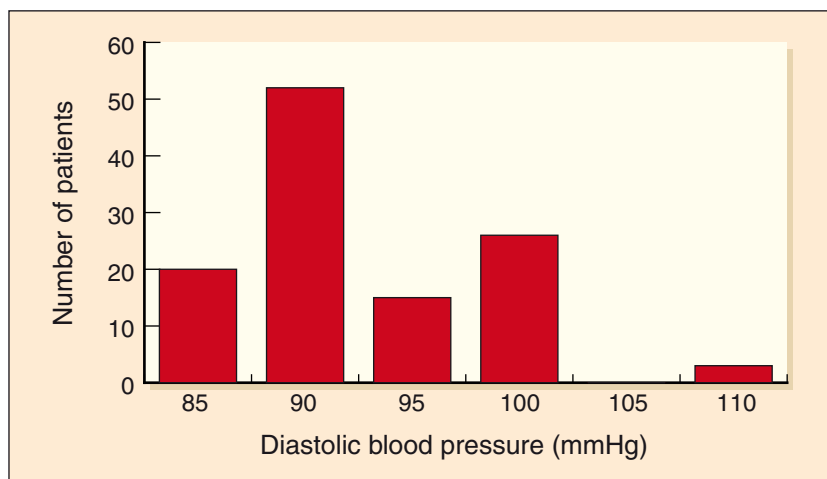*Figure 1. Results for patients with systolic blood pressure outside the target range.*

Figure 2. Results for patients with diastolic blood pressure outside the target range.
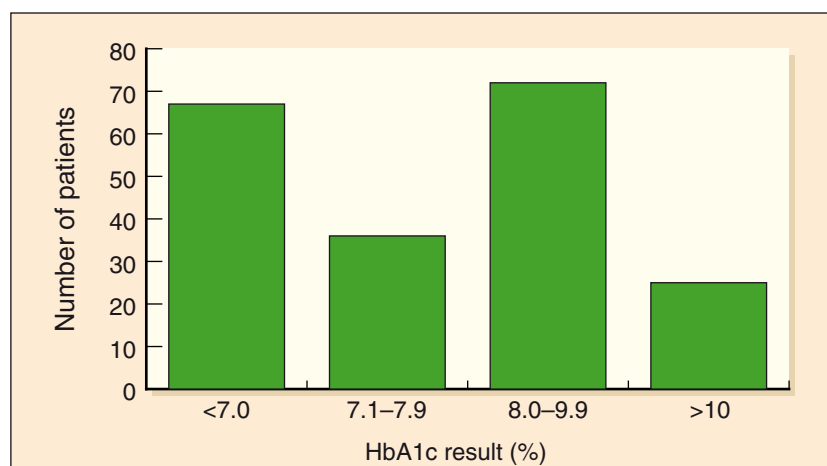

Figure 3. Results for patients with HbA$_{1c}$ outside the target range.

Results

For the purpose of this study, the results of the first 200 consecutive patients (88 female, 112 male) interviewed are presented. The majority had type 2 diabetes, and 29 also had ischaemic heart disease (IHD).

Of the 200 patients, four had type 1 diabetes. Of the remaining 196 with type 2 diabetes, 10 were insulin requiring, 137 were on oral hypoglycaemic agents and 49 were diet controlled.

Their ages ranged from 40 to 95 years; 88 were female and 112 were male.

Blood pressure

Forty-eight of the 200 patients (24.0%) had a blood pressure within the target range of 140/80 mmHg. Fifty-nine patients (29.5%) had a systolic blood pressure within the target range. Seventy-two patients (36.0%) had a diastolic blood pressure within the target range. *Figures 1 and 2* give the values of the remaining 152 patients whose blood pressure was outside the target ranges. Blood pressure control in the majority was therefore less than ideal.

Glycaemic control

Sixty-seven of the 200 patients (33.5%) had an HbA$_{1c}$ within the target range of <7%. *Figure 3* gives the values of the remaining 133 patients whose HbA$_{1c}$ was outside the target range. Glycaemic control in the majority of patients (66.5%) was therefore suboptimal.

Cholesterol levels

Patients with IHD

Twenty-nine of the 200 (14.5%) study patients had IHD. Of these:

- 9 (31.0%) had a total cholesterol level >5.0 mmol/litre and were not on a statin
- 3 (10.3%) were on a statin, but their total cholesterol level remained >5.0 mmol/litre.

Thus 1 in 3 (31.0%) of those with IHD and a total cholesterol level >5.0 mmol/litre were not on statin therapy. In total 12 (41.3%) of the patients with IHD were not receiving correct therapy.

Patients without IHD

The remaining 171 (85.5%) study patients did not have IHD. Of these:

- 29 (16.9%) had a total cholesterol level between 6.0 and 7.0 mmol/litre.
- 11 (6.4%) had a total cholesterol level >7.0 mmol/litre.

Discussion

Diabetes is a risk factor for cardiovascular disease, and is associated with macro-

vascular and microvascular complications. Macrovascular complications include coronary heart disease, stroke and peripheral vascular disease, while micro - vascular complications include diabetic nephropathy, retinopathy and cardio-myopathy. Cardiovascular disease accounts for approximately 70% of all deaths in people with diabetes (Laakso, 1999).

Blood pressure control was less than ideal in most of our patients. In the UK Prospective Diabetes Study (UKPDS, 1998) 59% of deaths in 1148 hypertensive patients with type 2 diabetes were caused by cardiovascular disease. However, patients assigned to 'tight' blood pressure control (mean 144/82 mmHg) showed a 32% reduction in diabetes-related deaths, a 44% reduction in stroke and a 37% reduction in microvascular disease compared with those assigned to less tight blood pressure control (mean 154/87 mmHg). The study concluded that antihypertensive therapy was as important as glycaemic control in preventing the complications of macro-vascular and microvascular disease.

Glycaemic control was also less than optimal in more than half of our patients. The value of tight glycaemic control in reducing vascular complications was demonstrated by the UKPDS study group (UKPDS, 1998) which concluded that better glycaemic control reduced the risk of major diabetic eye disease by a quarter and early kidney disease by a third. Clearly, however, not all patients are being educated on the importance of tight glycaemic control, or comply with monitoring.

About 40% of our patients with IHD were not receiving correct therapy. CHD risk is greatly increased for people with type 1 or type 2 diabetes (Pyorala et al, 1987). Although, there have been no trials of lipid-lowering therapy in patients who have diabetes and CHD, subgroup analyses are available from both the 4S (Pyorala et al, 1997) and CARE studies (Sacks et al, 1996).

Among the 202 patients with diabetes in the 4S study, there was a 43% decrease in all-cause mortality and a 55% decrease in CHD incidence in those who were treated with simvastatin, indicating that simvastatin conferred at least as great a benefit in patients with diabetes as in the non-diabetic participants.

In the CARE study, CHD incidence declined by 25% with pravastatin treatment in 586 patients with diabetes. There was a consistent reduction in CHD risk for patients with diabetes in these trials.

In England, only 30% of patients with established CHD and raised serum lipids, and fewer than 4% of individuals eligible for primary prevention, receive lipid-lowering therapy. Furthermore, target total cholesterol concentrations are achieved in fewer than 50% of patients who do receive such treatment (Petersen et al, 2000)

In the Framingham study, the presence of diabetes doubled the age-related risk of cardiovascular disease in men and tripled it in women (D'Agostino et al, 2000). Rates of myocardial infarction, angina and sudden death were twice as high in persons with diabetes than in those without diabetes.

The DSN was able to use the interview process to enhance the patient's knowledge about his/her diabetes. Her greatest concern as a result of these interviews was the patients' lack of understanding of the disease and the importance of keeping cholesterol levels, blood pressure and glycaemic control within the target range in the prevention of complications. At the end of the interview, when the results were discussed with the patient, all too often the patient was not aware of what the target ranges should be.

Not all patients were performing home monitoring of either blood or urine glucose. The reasons cited for this included 'My GP does one test every 6 months', inability to afford a blood glucose meter, non-compliance, or refusal of their GP to prescribe Diastix (a reagent strip for the detection of glucose in urine). After discussing home monitoring with patients, where indicated the DSN was able to supply them with Diastix or a suitable blood glucose meter and provide education on its use.

Despite ongoing education by GPs and practice nurses and reinforcement of information by a DSN at the eye-screening clinic, compliance remains a major concern. However, through the interview process, the DSN was able to establish that few patients continued smoking after diagnosis.

PAGE POINTS

1 The DSN was able to use the interview process to enhance the patient's knowledge about his/her diabetes.

2 Patients had little understanding of the importance of keeping cholesterol levels, blood pressure and glycaemic control within the target range.

3 After discussing home monitoring with patients, where indicated the DSN was able to supply them with Diastix or a suitable blood glucose meter and provide education on its use.

PAGE POINTS

1 In one UK study, only 42.8% of respondents were aware that diabetes can cause blindness.

2 Clearly, therefore, health education strategies need to be developed to ensure that people with diabetes have the correct information.

3 This research project has received positive feedback from GPs, practice nurses and patients.

4 All patients attending the eye screening clinic are now invited to speak with the DSN.

5 This research project is enhancing communication between secondary and primary care, sharing and extending knowledge for the benefit of patients.

In Gillibrand's study of knowledge levels of diabetic eye disease in people with diabetes, carried out in Preston, UK, only 42.8% of respondents were aware that diabetes can cause blindness and 60.3% were aware that good control of diabetes was very important (Gillibrand et al, 2000). Clearly, therefore, health education strategies need to be developed to ensure that people with diabetes have the correct information.

Conclusions

As the emphasis of care of patients with type 2 diabetes is in general practice, most of the opportunities for preventing complications lie in primary care. Pierce and Agarival (2000) conducted a national survey of diabetes management in primary care, and concluded that, although recommendations on the management of diabetes were in place, the survey raised concerns regarding the training of nurses and doctors.

This research opportunity has received positive feedback from GPs, practice nurses and patients, although initially the DSN was targeting patients not known to her. All patients attending the eye screening clinic are now invited to speak with the DSN.

The DSN saw the patient interview as an opportunity not only to collect data, but also to continue education, dispel misconceptions, inform patients of targets for care and treatment, and possible changes in treatment to improve glycaemic control, and, where possible, through patient empowerment, encourage compliance. Where necessary, the DSN was able to refer patients to other health professionals or follow-up patient education sessions.

All the patients taking part in the project have said how valuable they found the service, and how they appreciated having the opportunity to establish their blood pressure, HbA_{1c} and cholesterol readings and discuss their diabetes with a specialist nurse while attending retinal screening.

Research from the US (Moss et al, 1995) concluded that with known non-compliant patients the time factor was a barrier to health care. It is hoped that this facility will encourage attendance by making health care more accessible in one visit.

This research opportunity has provided a DSN from secondary care with a unique opportunity to review patients from primary care and, where indicated, to liaise directly with the GP in deciding care pathways for their patients. This, in turn, is enhancing communication between secondary and primary care, sharing and extending knowledge for the benefit of patients.

As a direct result of this study, Dr Clark has secured funding for a community diabetes nurse to work with practices to extend education and diabetes clinics in the community. ∎

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