

Original Research Paper

Diabetes care in general practice

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ABSTRACT

Aim: The aim of the study was to explore issues relating to the provision of quality care for people with diabetes in general practice.

Method: Self-administered questionnaires were sent to all 176 GPs in Wellington, Porirua and the Kapiti Coast. GPs were asked about their perceptions of the difficulties they faced in the provision of care to people with diabetes.

In addition, the questionnaire included two clinical vignettes designed to identify areas of general practice care which could be targeted by continuing medical education. Information from Wellington GPs was compared with that from GPs surveyed in Otago.

Results: The response rate was 65 per cent. Currently, GPs provide most of the care for their patients with Type 2 diabetes and many adults with Type 1 diabetes without complications. Most GPs expressed readiness to participate in education about diabetes care.

Conclusion: A commitment to resourcing auxiliary services and ongoing education for GPs about diabetes care is needed if this care is to be further devolved to primary care.

KEY POINTS

- With support, most GPs can provide quality care to patients with diabetes
- GPs usually do not look after enough patients with Type 1 diabetes with complications to gain confidence in their care
- Most GPs were interested and ready to participate in further education about diabetes care

INTRODUCTION

The care of people with diabetes requires the input of many different health professionals. Consequently the care of this group of people is often fragmented and less than ideal. The Wellington Diabetes Team was established to improve the care for people with diabetes in Wellington.

The evidence for problems with service delivery, often anecdotal, has been echoed by many involved in diabetes care, including consumers. An Otago study of service delivery for people with diabetes identified a need and desire to improve the level of knowledge of diabetes among the three groups surveyed – consumers, GPs and practice nurses.¹

It is known that intensive control of Type 1 diabetes results in fewer and more slowly progressive complications.² This intensive control requires a high level of patient education supported by input from health professionals. There is evidence to support preventive health care in diabetes both Type 1 and Type 2. Patients' self-care and education and health-care provider intervention decreases diabetic foot problems.³ Screening for and treatment of retinopathy is also of documented value.^{4,5} Detection of and appropriate management for patients with microalbuminuria decreases renal complications.⁶

Traditionally, much diabetes care has been provided by outpatient clinics in hospitals. Diabetes clinics have been associated with a number of problems, including long waiting times, short consultations

and lack of continuity of care. Shared care between primary and secondary care is increasingly being seen as ideal.⁷ However, there are also problems with standard general practice care for diabetes. General practice care is demand-led whereas people with diabetes require a programme of regular follow-up using a structured protocol.⁸ Regular follow-up of patients with diabetes in general practice can be aided by a register of diabetic patients and an appropriate recall system. Many general practices would also require the support of specialist diabetes nurses.

The objectives of this study were: firstly to survey GPs to identify barriers to the provision of diabetes care in general practice; and secondly to use two clinical vignettes to assess gaps in GP knowledge so these areas could be targeted with educational programmes. This study was part of a wider study which included a survey of practice nurses and people with diabetes.

METHOD

The research was approved by the Wellington Ethics Committee.

Sampling frame

VIGNETTE 1

A 55-year-old man presents with a two-month history of thirst, polyuria, 5kg weight loss and blurred vision. He has a past history of hypertension controlled with atenolol 50mg daily, a previous myocardial infarction at the age of 52 with ongoing stable angina, and intermittent claudication in the right calf on walking approximately 200 yards. In addition to atenolol he is taking aspirin 150mg/day, and isosorbide mononitrate 60mg/day. On examination his weight is 68kg (BMI 23); blood pressure 160/105mmHg; absent pulses in his right leg below the groin; impaired vibration sense to the level of the ankle in both feet. Fundoscopy reveals exudates, haemorrhages and new vessel formation in both retinae. Investigations show a random blood glucose of 14.8mmol/L, serum creatinine 0.18mmol/L, and his urine has protein.

Questionnaires were sent to all 176 GPs practising in Wellington, Porirua and the Kapiti Coast. Non-responding GPs were sent up to two reminder letters. The survey took place in 1998.

Survey

The self-administered questionnaire consisted of two parts. In the first, GPs were asked about the support they needed to provide care for their patients and about any barriers they perceived to the provision of care to people with diabetes. Most questions were closed and GPs were asked to indicate their responses on a 5-point Likert scale. The second part of the questionnaire contained two clinical vignettes, developed in 1996 by the Otago Diabetes Team as part of their baseline survey. GPs were asked to select the correct response from a list of options. Responses to the clinical vignettes by Wellington GPs were compared with responses by GPs in Otago.

Feedback on the questionnaire

A physician specialising in diabetes care was asked for his opinion about appropriate responses to the vignettes. An educational evening for GPs was held in which the vignettes were discussed.

Analysis

Data were entered directly into Microsoft Access. Analysis was descriptive and frequencies were generated using Microsoft Access.

vignette 2

A 34-year-old woman with insulin-dependent diabetes attends your surgery

for review of her diabetes. She was diagnosed with IDDM (Type 1 diabetes) at age eight years and has been followed intermittently at hospital clinics and general practice. Her diabetic control has been "reasonable" with a recent HbA1C of 8.6 per cent. On questioning she often awakes in the middle of the night with hypoglycaemia and her awareness of hypoglycaemic episodes has decreased over the last two years. She has had three visits to the casualty department unconscious with hypoglycaemia in the last 12 months. Her current insulin regime is Actrapid 6u and Protaphane 12u before breakfast and Actrapid 8u and Protaphane 14u before her evening meal. There have been several episodes of vomiting shortly after meals, and she constantly feels bloated after eating. On examination she weighs 52kg (BMI 21); blood pressure 120/80mmHg; absent ankle jerks; loss of vibration sense to the mid calves bilaterally; 3 cm ulcer under the first MTP joint of the right foot; and several microaneurysms and hard exudates on fundoscopy. Her serum creatinine is 0.1mmol/L, 24-hour urine protein excretion is 45mg/24 hours, HbA1C 9.4 per cent.

RESULTS

Response rate

Two questionnaires were sent to people who were not GPs. A further five GPs were not practising at the time they received questionnaires, and one GP did not complete the questionnaire because he had no patients with diabetes. Replies were received from 110 of the remaining GPs, a response rate of 65 per cent. No information is available about non-responding GPs.

Provision of care for Type 1 diabetes

Fifty eight per cent of responding GPs provided most of the care for their adult patients with Type 1 diabetes without complications. In contrast, only 13 per cent of GPs provided most of the care for their adult patients with Type 1 diabetes with complications, with 73 per cent of GPs having these patients cared for by the Hospital Diabetes Clinic and a further 12 per cent sharing the care with the Clinic. Eighty two per cent of GPs reported that children with Type 1 diabetes in their practice were cared for by the Hospital Diabetes Clinic most of the time.

GPs were asked if they felt they had all of the skills to care for their patients with Type 1 diabetes. 1 per cent felt they had all of the skills, and 39 per cent felt they had most of the skills. Forty five per cent of GPs felt they had quite a few skills, 12 per cent that they had not many skills, and 2 per cent insufficient skills.

If they were to provide care for all of their patients with Type 1 diabetes, 75 per cent of GPs felt they would always or frequently require specialist support or back-up from ophthalmology, 74 per cent from nurse educators, 66 per cent from dietitians, 51 per cent from podiatry, 27 per cent from a renal service, 26 per cent from a diabetes clinic, and 20 per cent some form of cultural support.

Provision of care for Type 2 diabetes

Almost all GPs (95 per cent) managed the care of their patients with Type 2 diabetes without complications. Fifty per cent of GPs provided most of the care for patients with Type 2 diabetes with complications; 35 per cent reported that the care for this group of patients was mainly with the Hospital Diabetes Clinic; and a further 11 per cent shared the care with the Clinic.

Eight per cent of GPs felt they had all of the skills to care for their patients with Type 2 diabetes, 71 per cent felt they had most of the skills, 17 per cent quite a few skills, and 3 per cent not many skills. No GPs felt they had insufficient skills to manage patients with Type 2 diabetes.

If they were to provide care for all of their patients with Type 2 diabetes, 64 per cent of GPs felt they would always or frequently require specialist support or back-up from ophthalmology, 68 per cent from a dietitian, 65 per cent from nurse educators, 45 per cent from podiatry, 16 per cent from a renal service, 16 per cent some form of cultural support, and 8 per cent support from the diabetic clinic.

TABLE 1. GP RESPONSES TO CLINICAL VIGNETTE 1*

		Wellington (%)	Otago (%)	Specialist comment
1	Assuming that a diagnosis of diabetes has been made, what would be your initial management?			
	DIETITIAN REVIEW, EDUCATION, H GLUCOSE MONITORING	51 (49.6)	39 (50.6)	DIETITIAN REVIEW AND DIABETES ED MINIMUM. REFERRAL FOR SPECIALIST OPTIMAL FAIRLY SOON IN VIEW OF THE PROBLEMS. IT IS DEBATABLE IF GLUC NEEDS TO BE INTRODUCED AT THIS S ALREADY A LOT FOR THE PATIENT TO
	Refer for specialist opinion	26 (24.7)	34 (44.2)	
	DIETITIAN REVIEW, EDUCATION, H GLUCOSE MONITORING AND POSSI	15 (14.3)		
	Dietitian review and diabetes education	11 (10.5)	4 (5.2)	
	DON'T KNOW	2 (1.9)	0 (0)	
2	Regarding medication would you...			
	Continue current therapy	24 (23.3)	7 (9.1)	DIET SHOULD BE TRIED FIRST, BEFORE MEDICATION. A SULPHONYLUREA W DRUG TREATMENT CHOICE FOR THIS PATIENT
	BEGIN METFORMIN	7 (6.8)	4 (5.2)	
	BEGIN A SULPHONYLUREA, EG, GLI GLIPIZIDE	49 (47.6)	45 (58.4)	
	REFER FOR SPECIALIST OPINION T	19 (17.8)	26 (33.8)	
	OTHER	5 (4.9)	0	
3	Given that this man has diabetes would you stop his beta-blocker therapy and begin an alternative medication?			
	YES	67 (65.1)	54 (70.1)	HE HAS STABLE ANGINA AND THE BETA SHOULD BE CONTINUED, SELECTIVE I NOT CAUSE TOO MANY PROBLEMS WITH HYPOGLYCAEMIC UNAWARENESS
	No	33 (32.0)	15 (19.5)	
	OTHER/NO ANSWER	3 (2.9)	9 (10.4)	
4	In attempting to control this man's blood pressure a reasonable target would be:			
	150/95MMHG	6 (5.7)	5 (6.5)	AT LEAST, WHO WOULD PROBABLY S, THE BETTER. TREATING HYPERTENS IMPORTANT FOR GOOD VASCULAR O 2 DIABETES. A BETA BLOCKER IS ACC INHIBITOR PREFERRED IN TYPE 1 DI
	140/90mmHg	67 (63.8)	42 (54.5)	
	130/90MMHG	31 (29.5)	26 (33.8)	
	OTHER/NO ANSWER	1 (1.0)	4 (5.2)	
REASONABLE DIABETIC CONTROL IS ACHIEVED FOR THE NEXT 12 MONTHS AND THEN BEGINS TO DETE RETURN AND H1C RISES TO 13.0%. THE PATIENT HAS BEEN RESISTANT TO BEGINNING INSULIN AND MEDICATION. HE FINALLY AGREES TO BEGIN INSULIN.				
5	Would you			
	INSTRUCT THE PATIENT ON COMM IN YOUR ROOMS	3 (2.9)	7 (9.1)	HE SHOULD HAVE HAD SPECIALIST R POINT. A DNE COULD INSTRUCT ON C OF INSULIN AS AN OUTPATIENT
	Refer to the hospital diabetes educator for commencement of insulin	41 (39.4)	26 (33.8)	
	REFER TO A SPECIALIST	51 (49.0)	37 (48.1)	
	OTHER	9 (8.7)	7 (9.1)	
6	An appropriate initial insulin regimen would be:			
	Once daily Protaphane	35 (34.0)	8 (10.4)	IN ADDITION TO CONTINUING HIS OF
	TWICE DAILY PROTAPHANE	4 (3.9)	11 (14.3)	
	ACTRAPID BEFORE EACH MEAL AND BEFORE BED	21 (20.4)	16 (20.1)	
	MIXED SHORT AND INTERMEDIATE TWICE PER DAY	41 (39.8)	33 (42.9)	
	OTHER	2 (2.0)	3 (11.7)	
* RECOMMENDED ANSWERS IN BOLD PRINT				

TABLE 2: GP RESPONSES TO 'CLINICAL VIGNETTE 2'					
		Wellington (%)		Otago (%)	
					Specialist comments
1	You decide to change her insulin regimen. An appropriate change would be:				
	TWICE DAILY PROTAPHANE ONLY	8	(8.5)	10	(13.0)
	Splitting the evening dose of insulin (Actrapid before dinner and Protaphane before bed)	28	(31.2)	24	(31.2)
	ACTRAPID BEFORE EACH MEAL ONLY	28	(29.0)	22	(28.0)
	CHANGING PROTAPHANE TO ULTRATAR	17	(18.3)	7	(9.1)
	DON'T KNOW/NO ANSWER	15	(16.1)	14	(18.2)
2	This woman should be treated with an ACE inhibitor				
	YES	88	(89.5)	46	(59.7)
	No	27	(28.4)	23	(29.9)
	DON'T KNOW/NO ANSWER	5	(5.1)	8	(10.4)
3	With respect to her foot ulcer:				
	THIS IS LIKELY TO BE DUE TO ISCHAEMIA. HAVE NON-INVASIVE STUDIES OF THE LEGS	15	(14.0)	9	(11.0)
	This is likely to be neuropathic and she should be referred for podiatry	81	(80.2)	60	(77.9)
	DON'T KNOW/NO ANSWER	5	(5.0)	8	(10.4)
4	Would you obtain a plain x-ray of her right foot?				
	Yes	51	(50.5)	51	(66.2)
	No	49	(48.5)	19	(24.7)
	DON'T KNOW	1	(1.0)	7	(9.1)
5	This degree of retinopathy would suggest:				
	Need for tighter diabetes control and annual fundus photography	22	(21.4)	23	(29.8)
	NEED FOR TIGHTER DIABETES CONTROL, FUNDUS PHOTOGRAPHY AS WELL AS SEMI-URGENT OPHTHALMOLOGICAL REVIEW	11	(10.7)	3	(3.9)
	SEMI-URGENT OPHTHALMOLOGIST REVIEW	40	(40.8)	23	(29.0)
	URGENT LASER THERAPY IS REQUIRED	15	(14.6)	9	(11.7)
	BIANNUAL FUNDAL PHOTOGRAPHY IS REQUIRED	4	(3.9)	4	(5.2)
	DON'T KNOW/NO ANSWER	1	(1.0)	11	(14.3)
	OTHER	8	(7.8)	4	(5.2)
6	Intensive insulin therapy has been shown to: (TICK AS MANY AS APPLICABLE)				
	Improve diabetic autonomic neuropathy	2	(2.1)	8	(12.5)
	REDUCE THE NUMBER OF HYPOGLYCAEMIC EPISODES	13	(13.7)	11	(17.2)
	Reduce microvascular complications of diabetes	1	(1.1)	14	(21.9)
	REDUCE MACROVASCULAR COMPLICATIONS	6	(6.3)	2	(3.2)
	REDUCE MICRO- AND MACROVASCULAR COMPLICATIONS	11	(11.6)	0	
	ALL OPTIONS	28	(27.4)	17	(26.8)
	DON'T KNOW	9	(9.5)	12	(18.8)
	OTHER	27	(28.4)	0	

* Recommended answers in bold print

Continuing education

Almost all GPs (97 per cent) were interested in a programme of continuing education in diabetic care.

Barriers to the provision of care

Sixty eight per cent of GPs felt that time limited their ability to provide care to patients with diabetes, 56 per cent the cost of services, 49 per cent knowledge, and 11 per cent cultural issues. Forty four per cent of GPs commented that increased access to diabetes nurse educators would improve services.

Clinical vignettes

Full response to the clinical vignettes and specialist comments appear on the General Practice Department website <http://www.wnmeds.ac.nz/academic/gp/index.html>

Vignette 1: there was little variation in GPs' responses to diagnostic questions. The majority of both Wellington and Otago GPs answered these questions in accordance with expert opinion. Questions eliciting responses worthy of comment are shown in Table 1.

Vignette 2: A large majority of GPs in Otago (75 per cent) and Wellington (90 per cent) agreed with expert opinion that this patient did not have adequate diabetes control. The questions relating to this vignette which led to the most disparate answers were again the ones concerning the insulin regimen (Table 2). There were also a variety of responses given in response to questions concerning management of diabetes-related complications and to the questions about medical care in pregnancy.

DISCUSSION

It is clear that most people with diabetes, particularly Type 2, are cared for by their GP in the community. An increasing prevalence of diagnosed diabetes in New Zealand also means there will be an increasing burden on secondary care services. When diabetes care is further devolved from hospital to community based care. GPs will become even more involved in the care of people with diabetes. This survey assessed the type of support that GPs would need to improve and extend the level of care in general practice.

Clinical vignettes

The GPs' responses to clinical vignettes reflected the areas in which they had indicated confidence in themselves in Part I of the survey. Accurate self-assessment of skills and knowledge is important. Almost all of the GPs surveyed were interested in a programme of continuing education in diabetes care, reflecting the interest GPs have in this area. This has been the experience in Otago, with 75 per cent of GPs having attended at least one diabetes education session over the last two years.

The first clinical vignette concerning a patient with newly diagnosed Type 2 diabetes confirmed that GPs do have the necessary diagnostic skills. However, responses to questions about medication indicated less certainty. The response to question 2 depended on the GPs' interpretation of the question. Immediate treatment would be a trial of diet only with hypoglycaemic agents added if necessary.

In response to the question regarding beta blocker medication, 65 per cent of Wellington and 70 per cent of Otago GPs stated the medication should be stopped. However, this patient has both angina and hypertension, and the medication is likely to be of more benefit if continued. Hypoglycaemic unawareness is less of a problem with selective beta blockers. This was one of the learning points highlighted at the educational evening.

The target for optimal blood pressure control for the patient in Vignette 1 was another area thoroughly discussed by GPs. Recent work from the UK Prospective Diabetes Study Group⁹ indicates that lowering blood pressure to at least the levels indicated by GPs reduces the risk of non-fatal or fatal diabetic complications and of death related to diabetes. Atenolol or captopril gave similar results,⁹ supporting the discussion around the choice of drug in question 3 (Table 1).

Insulin therapy in particular was an area that GPs were not so certain about. Most doctors would refer for commencement of insulin therapy, and a diabetes nurse educator was an appropriate referral. The choice of insulin for initial treatment produced a range of responses reflecting uncertainty. Insulin treatment for diabetes has traditionally been provided by hospital-based clinics, so GPs have had little opportunity or need to gain the knowledge and skills required. Even with shared care an individual GP would see only a few patients with Type 1 diabetes.

Insulin regimen was a difficult area in the responses to Vignette 2. For question 6 (Table 2), the appropriate choice was that of splitting the evening dose of insulin to try to avoid the night "hypos". The uncertainty in GP responses reflects the need for specialist support by either diabetes nurse educators or diabetes physicians in the management of some patients.

GPs were uncertain what the expected benefits of intensive insulin therapy are (question 6). It has been shown to reduce microvascular complications.² Intensive insulin therapy is, however, associated with an increase in hypoglycaemic episodes. While many people hope to also reduce macrovascular complications, this has not been proven.²

Diabetes complications for this patient in Vignette 2 were not as well managed by the GPs as for the patient in the first vignette. These more serious complications in an insulin-dependent patient are less common in a general practice, and the GPs' uncertainty reflects this. Again, management of blood pressure was an area precipitating discussion. GPs were interested to know that it was not considered essential to treat this patient with an ACE inhibitor at this time, rather that the aim was to keep her blood pressure low. Management of the foot ulcer and retinal changes do require specialist input, as appropriately mentioned by GPs in their responses. There was uncertainty around the appropriate level of urgency for referral.

GPs were united in wishing to refer the patient in Vignette 2 to a specialist for pregnancy care. The uncertainty about specific aspects of pregnancy care is again attributable to the traditional referral to secondary care of women with Type 1 diabetes of childbearing age. As all GPs would have referred the patient, this does not reflect inadequate knowledge.

Overall

The results from the clinical practice survey and from the vignettes present a sound basis for GP involvement with diabetes care. The survey of current practice indicates that there are areas of diabetes care which GPs feel less confident in managing and which will need to be addressed by further education. These areas are those where hospital-based clinics have traditionally provided care so GPs have had little opportunity or need to gain the knowledge and skills required. Responses to the question about ongoing education suggest that such education would be readily accepted by GPs.

The effectiveness of shared care has been demonstrated in clinical trials¹⁰ but its effectiveness in "real life" is not as well established.⁷ Effective shared care is associated with good communication between the GPs and the specialist diabetes clinic, continuity of care between patient and GP,¹¹ structured GP care based around a diabetes register, and a system of prompts for patient recall.¹² Extension of community based care for diabetes also requires commitment of appropriate resources – diabetes educators, dietitians, podiatrists – as well as secondary back-up to enable GPs to carry out the role of primary provider of health services for people with diabetes.

Acknowledgements: The research reported in this paper was funded by the Wellington Diabetes Team. We are grateful to Dr Bob Smith for providing expert opinion on "best practice" management of the case vignettes and for discussing management of the case vignettes with GPs at a teaching evening. Thank you to the GPs who supported this study by completing the questionnaires.

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