

The quality of diabetes care: a comparison between patients enrolled and not enrolled on a regional diabetes register.

Kirsten Coppel^{1,2}, Sheila Williams³, Karen Anderson², Claire Lamb², Victoria L. Farmer¹, Jim I. Mann¹

¹ Edgar National Centre for Diabetes Research, University of Otago, Dunedin, New Zealand

² Diabetes Project Trust Otago, Dunedin, New Zealand

³ Department of Preventive and Social Medicine, University of Otago, Dunedin, New Zealand

BACKGROUND

A regional diabetes register was established to monitor diabetes care as part of a quality improvement initiative in 1998 in Otago, New Zealand. About 75% of the approximately 5,000 diabetic patients in Otago were enrolled on the register in 2004.

The aim of the study was to determine whether diabetic patients enrolled on a regional diabetes register that provides annual general practitioner (GP) audit and recall reports receive better care than diabetic patients not enrolled on a regional diabetes register.

METHODS

88% of GPs in the region agreed to participate. Patients not enrolled on the Otago diabetes register were identified by obtaining lists of patients who had had an HbA1c test in the previous 12 months from the two local laboratories. Diabetes status was confirmed by checking the medical notes.

Demographic, clinical and laboratory data were collected for 2005 for all identified diabetic patients attending participating general practices. Data for non-register patients were anonymised. Following each of these visits, an audit and recall report was provided for each GP. Recall reports listed patients who had not had recommended examinations or tests completed during the year eg retinal examination.

Means and standard deviations, or frequencies and percentages were calculated for the two populations. Characteristics of the two populations were compared with t-tests or the Chi square test.

RESULTS

4,771 diabetic patients were identified, 3,664 were enrolled on the regional register and 1,107 were not. The average number of diabetic patients per GP was 42.4. After adjusting for non-participating GPs, the estimated number of people with diabetes in the region was 5,267.

Mean age of the register population was 65.8 (SD=14.4) years (Table 1). The non-register population was younger by 1.8 years and smoking status was unknown for more than half. Three-quarters of the register population had had a subsidised annual diabetes review during 2005 compared with 62% of the non-register population (p<0.001).

TABLE 1. Patient characteristics by registration status, 2005.

Characteristic	Register (n=3,646)		Non-register (n=1,103)		p-value
	Number/mean	%/SD	Number/mean	%/SD	
Female	1,757	48.2	522	47.3	0.615
Male	1,889	51.8	581	52.7	
Diabetes type					
T1DM	331	9.1	54	4.9	<0.001
T2DM	3,315	90.9	1,049	95.1	
Age (years)*					
All	65.8	14.4	64.0	16.0	<0.001
T1DM	43.7	16.1	30.5	14.6	<0.001
T2DM	68.0	12.2	65.7	14.1	<0.001
Age at diagnosis (years)*					
T1DM	20.4	12.6	17.7	12.7	0.228
T2DM	58.0	12.4	60.6	14.4	<0.001
Get Checked Review†	2,714	74.4	686	62.2	<0.001

* mean and SD presented

† a subsidised annual diabetes review

Overall, statistically significant higher proportions of the register population had process measures completed compared with the non-register population (Table 2). The exception was HbA1c testing, which probably reflects the method we used to construct the non-register patient list.

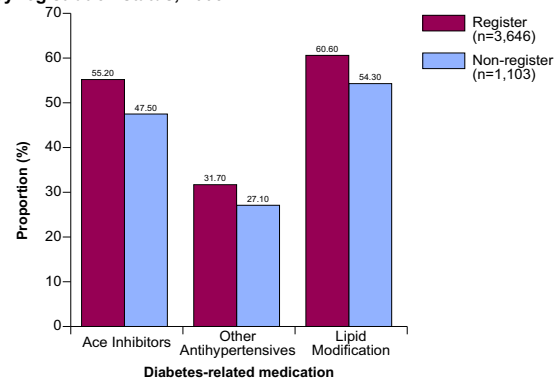
TABLE 2. Completion and recording of clinical and laboratory process measures by registration status, 2005.

Process Measure	Register (n=3,646)		Non-register (n=1,103)		p-value
	Number	%	Number	%	
Body Mass Index	3,099	85.0	690	62.6	<0.001
Blood pressure	3,531	96.8	1,062	96.3	0.358
Foot exam	2,736	75.0	685	62.1	<0.001
Retinal exam	3,387	92.9	826	74.9	<0.001
HbA1c – type 1	298	90.0	42	77.8	0.009
HbA1c – type 2	3,069	92.6	1,036	98.8	<0.001
Lipids	2,958	81.1	922	83.6	0.064
Serum creatinine	2,789	76.5	832	75.4	0.467
UACR*	2,915	80.0	820	74.3	<0.001

*UACR = Urine albumin creatinine ratio

Statistically significant higher proportions of the register population (p<0.01) were prescribed diabetes related medications (Figure 1).

FIGURE 1. Prescription of diabetes and diabetes-related medications by registration status, 2005



Overall, the register population had statistically significant better BMI, diastolic blood pressure, total cholesterol and triglyceride results than the non-register population (Table 3).

TABLE 3. Clinical and laboratory measures by registration status, 2005.

	Register (n=3,646)		Non-register (n=1,103)		p-value
	Mean	SD	Mean	SD	
BMI (kg/m ²)	30.0	6.1	30.7	6.4	0.016
Systolic BP (mmHg)	135.3	18.2	135.3	18.5	0.997
Diastolic BP (mmHg)	76.2	10.4	77.8	10.5	<0.001
HbA1c (%) - T1DM	8.7	1.6	9.0	2.2	0.254
HbA1c (%) - T2DM	7.4	1.4	7.2	1.4	<0.001
Total chol (mmol/L)	4.65	1.01	4.88	1.11	<0.001
HDL chol (mmol/L)	1.37	0.41	1.36	0.38	0.368
Triglycerides (mmol/L)	1.81	1.25	2.01	1.57	<0.001
Serum creatinine*	0.09	0.04-0.61	0.09	0.05-0.35	0.002
UACR*	1.99	0.1-1241	1.85	0-463.6	0.137

* log transformed

CONCLUSIONS

- Our estimate of the number of people with diagnosed diabetes in Otago suggests that 'official' estimates are likely to be low, especially as our estimate did not capture all people with diabetes who did not have an HbA1c test during 2005.
- Quality of care as measured by process measures was better for the diabetes register population compared with the non-register population.
- Missing data, particularly for the non-register population, limited comparisons between the two study groups of intermediate outcome measures.