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Quality of diabetes care

A comparison of division diabetes registers

Background

Several recent government policies aim to narrow the gap between optimal and current quality of care in the management of type 2 diabetes. This study examines trends in the quality of care and intermediate outcomes for patients between 1995 and 2004.

Methods

Two dissimilar divisions of general practice in Sydney's southwest gathered diabetes patient data from 1995–2004 from participating general practices. Variables included frequency of assessment, body mass index, glycosylated haemoglobin, systolic blood pressure and total cholesterol.

Results

Positive and significant changes occurred in glycosylated haemoglobin, total cholesterol and systolic blood pressure for patients in both divisions, though the mean values did not achieve guideline targets. There was no significant change in body mass index. There were significant differences between the divisions in most variables.

Discussion

The current package of incentives and supports for diabetes care in general practice may be having a positive effect, however with more than half of the patients in this study having suboptimal control of their diabetes, there is a clear need for further systematic and multidisciplinary support.

■ **Type 2 diabetes affects 7.6% of the Australian adult population, and its prevalence is increasing.¹ Diabetes accounts for 3.5% of general practice encounters.² General practitioners have a critical role in the long term care of patients with diabetes,³ however there is a gap between current and optimal quality of care.⁴**

A number of recent government policy initiatives aim to support the GP's role in diabetes care. Since 2001, the National Integrated Diabetes Program (NIDP) has provided incentives and guidelines to GPs to support better quality planned care for patients with diabetes in general practice.⁵ Practices are supported by divisions of general practice to improve quality of care through education, use of division registers, establishing better systems of care and providing referral services for diabetes and nutrition education.

Previous research⁶ suggested that GPs in southwest Sydney (New South Wales) who use division diabetes registers provide better quality of care than those who do not. In the first few years after the introduction of the NIDP there was evidence that the quality of care provided in general practice did improve, but was still suboptimal at the end of the Divisions Diabetes and Cardiovascular Quality Improvement Program.^{4,7} The Macarthur and Southern Highlands divisions of general practice registers provide a unique opportunity to explore these trends.

Methods**Study population**

Diabetes patient data from 1995–2004 was captured by the Macarthur and Southern Highlands divisions of general practice in the southwest of Sydney. Macarthur is an urban division with semirural areas that has grown rapidly since 1995. It is relatively disadvantaged and has a young population (median age about 32 years).⁸ Southern Highlands is a rural division with an older (median age 39.6 years) and more socioeconomically advantaged population.⁹ In 2005 the GP to population ratio in Macarthur was 1:1209 and in Southern Highlands the ratio was 1:1027.^{8,9}

Table 1. Criteria for frequency of assessment and intermediate outcomes

	NIDP recommendations for frequency of assessment	RACGP guideline targets for intermediate outcomes
Glycosylated haemoglobin	Once per year	≤7%
Total cholesterol	Once per year	<4.0 mmol/L
Body mass index	Every 6 months	<25 kg/m ²
Blood pressure	Every 6 months	<130/80 mmHg

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Data collection and extraction

Practices provided patient consented data to the divisions for entry into the CARDIAB register. Three practices in the southern highlands sent data electronically from 2003. De-identified information from the most recent evaluation record was extracted from the CARDIAB register in each division for each patient for every year from 1995–2004.

The University of New South Wales Human Research Ethics Committee granted ethics approval.

Study data

Study variables included patient demographic information, frequency of assessment and values for body mass index, glycosylated haemoglobin, systolic blood pressure and total cholesterol. The NIDP frequency of assessment criteria and The Royal Australian College of General Practitioners (RACGP) intermediate outcome criteria were used in the analysis (*Table 1*).

Analysis

Comparisons between the divisions, year of assessment and patient gender were conducted using the independent t-test for age, duration of diabetes and intermediate outcomes. Significance level was set at $\alpha = 0.05$.

Results

Description of sample

The number of GPs providing data steadily increased over the 10 years, from 35 to 121 GPs in Macarthur and 41 to 48 in the Southern Highlands. In 2004, 71% (86) of GPs in the Macarthur division and 100% (48) in the Southern Highlands division provided data to the registers.

In 2004, 85% ($n=1443$) of the estimated population aged above 25 years with type 2 diabetes was on the Southern Highlands register and 40% ($n=1915$) on the Macarthur register, based on population estimates using the Australian Diabetes, Obesity and Lifestyle Study (AusDiab) age-gender distributions.¹⁰

The mean age of males ($p=0.00$) and females ($p=0.00$) was younger in Macarthur than in Southern Highlands. Within each division the mean age for male and female patients was similar (58.5 for males [SD 12.0] and 60.5 [SD 12.9] for females in Macarthur, and 65.1 [SD 12.1] for males and 65.6 [SD 12.3] for females in Southern Highlands). The only change in age over the 10 years was for males in Southern Highlands, increasing from 59.8 to 66.0 years.

Duration of diabetes was significantly longer in the Southern Highlands for males over the 10 years compared with Macarthur ($p=0.000$). The mean duration was similar for males and females within each division (mean 5.0 and 5.6 in Macarthur and 6.4 and 6.7 in Southern Highlands respectively for males and females).

Intermediate health outcomes

Positive and significant changes occurred in glycosylated haemoglobin, total cholesterol and systolic blood pressure for patients in both divisions during the period 1995–2004. There was no significant change in body mass index (*Table 2*).

There were significant differences between the divisions, with Southern Highlands recording greater reductions in body mass index ($p=0.000$), systolic blood pressure ($p=0.002$) and glycosylated haemoglobin ($p=0.019$). There was no difference in the change in total cholesterol between the two divisions ($p=0.306$), although Southern Highlands had higher levels (*Table 2*).

Mean values did not achieve guideline targets¹¹ in any year for either division. Mean systolic blood pressure was consistently higher in the Southern Highlands (*Table 2*).

Discussion

The significant positive changes in systolic blood pressure, glycosylated haemoglobin and total cholesterol largely coincided with the introduction of the NIDP in November 2001. Body mass index was the only measure that did not change. There was also a continuing increase in the use of statins over the period.¹²

Results may have been influenced by the dissemination of new guidelines¹¹ which recommended a lower target for blood pressure than previously. From this period, division programs intensively promoted care planning and assisted with diabetes reviews through the diabetes educators employed by each division. This could also explain the increase in new patient registrations after 2001.

Although the registers cover a high proportion of the estimated population with diabetes, they do not represent the whole population. Coverage was initially low and varied over the 10 years. The data are serial cross sections rather than a cohort of the same groups of patients. Patients left or entered the registers over the period, however the mean age and duration of diabetes were similar to the patient constituent in the Divisions Diabetes and Cardiovascular Quality Improvement Program¹³ and Australian National Diabetes Information Audit and Benchmarking data collections.¹⁴ Division register data may be strengthened by linkage to administrative datasets such as hospitals and Medicare.

Table 2. Changes in intermediate health outcomes by year of evaluation

Year	Body mass index		Systolic blood pressure		Glycosylated haemoglobin		Total cholesterol	
	MDGP	SHDGP	MDGP	SHDGP	MDGP	SHDGP	MDGP	SHDGP
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
1995	30.3 (6.4)	33.1 (8.8)	135.2 (16.6)	141.6 (18.7)	8.0 (1.8)	7.5 (1.3)	5.7 (1.2)	5.7 (1.1)
1996	30.6 (6.4)	31.3 (6.2)	135.8 (16.7)	139.3 (18.5)	7.4 (1.4)	7.8 (1.5)	5.5 (1.1)	6.0 (1.7)
1997	31.4 (8.9)	30.6 (5.9)	134.2 (15.0)	137.1 (16.7)	7.4 (1.5)	7.6 (1.6)	5.5 (1.2)	5.8 (1.2)
1998	30.7 (6.8)	30.7 (6.1)	135.3 (15.8)	138.6 (17.0)	7.5 (1.5)	7.6 (1.5)	5.3 (1.1)	5.7 (1.4)
1999	30.8 (6.4)	30.7 (6.2)	135.9 (16.3)	137.4 (17.1)	7.5 (1.4)	7.7 (1.6)	5.2 (1.0)	5.5 (1.1)
2000	30.9 (6.5)	30.7 (6.5)	134.1 (15.7)	136.2 (16.4)	7.4 (1.4)	7.3 (1.4)	5.1 (1.1)	5.3 (1.1)
1995/2000	$p=0.451$	$p=0.050$	$p=0.450$	$p=0.072$	$p=0.000$	$p=0.313$	$p=0.000$	$p=0.059$
2001	31.4 (6.6)	31.0 (6.2)	132.3 (14.7)	135.7 (16.1)	7.4 (1.4)	7.3 (1.3)	4.9 (1.0)	5.1 (1.0)
2002	31.6 (6.3)	30.8 (6.1)	131.0 (13.9)	135.4 (14.7)	7.2 (1.4)	7.1 (1.3)	4.9 (1.1)	5.0 (1.0)
2003	31.5 (6.3)	31.2 (6.5)	131.5 (14.4)	135.6 (16.5)	7.2 (1.4)	7.1 (1.3)	4.9 (1.1)	4.9 (1.1)
2004	31.7 (6.9)	31.2 (6.5)	130.0 (13.8)	134.3 (15.6)	7.1 (1.3)	7.1 (1.3)	4.8 (1.0)	4.8 (1.0)
2000/2004	$p=0.076$	$p=0.187$	$p=0.000$	$p=0.098$	$p=0.002$	$p=0.033$	$p=0.000$	$p=0.000$
1995/2004	31.3 (6.7)	31.1 (6.5)	132.6 (15.0)	137.1 (16.7)	7.4 (1.4)	7.4 (1.4)	5.0 (1.1)	5.4 (1.2)
1995/2004	$p=0.099$	$p=0.109$	$p=0.000$	$p=0.007$	$p=0.000$	$p=0.050$	$p=0.000$	$p=0.000$
MDGP = Macarthur Division of General Practice SHDGP = Southern Highlands Division of General Practice								

This study has important implications for measures to improve quality of care for people with diabetes in general practice. The current package of incentives and supports for general practice may be having a positive effect. However, with more than half the patients achieving suboptimal control of their diabetes, there is a clear need for further systematic and multidisciplinary support, including more effective self management education, access to dietetic and physical activity programs and medication review.

Implications for general practice

- A gap exists between optimal care and current quality of care for diabetes in general practice.
- This study shows clear positive trends in intermediate health outcomes for systolic blood pressure, glycosylated haemoglobin and total cholesterol (but not body mass index).
- This study underlines the importance of developing systematic collections of intermediate outcome data in general practice.

Conflict of interest: none declared.

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