

Provider Organization Performance Assessment Utilizing Diabetes Physician Recognition Program

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Objective: To examine the level of care in a large provider organization with respect to the Diabetes Physician Recognition Program (DPRP) standards of care and describe treatment patterns, diabetes-related complications, and achievement of clinical goals among patients stratified by glycemic control levels.

Study Design: Observational, retrospective, chart review study assessing care among patients with diabetes.

Methods: Diabetic patients aged ≥ 5 years who were prescribed insulin or oral hypoglycemics/antihyperglycemics for at least 12 months by 1 of 14 DPRP-participating physicians from the provider organization were eligible. A sample of patient medical charts was collected. Descriptive statistics were generated to assess demographic and clinical variables, with subanalyses for patients in the 3 glycosylated hemoglobin (A1C) cohorts. Data were used to describe the demographics, disease prevalence, comorbidities, clinical outcomes, and treatment patterns of the study population. Results were assessed according to national treatment guidelines.

Results: Almost all DPRP recognition measures were met and/or exceeded. More than 90% of patients received appropriate assessments. The majority achieved the A1C, blood pressure, and low-density lipoprotein control levels recommended by national treatment guidelines. Patients with multiple comorbidities had worse levels of control, with only 14.3% of patients achieving all 3 treatment goals. Nearly 30% of patients had diabetes-related complications, most commonly kidney disease.

Conclusions: Differences in control and treatment patterns exist in patients with varying levels of glycemic control. Opportunities exist to improve diabetes care through goal attainment. Further research is needed to determine whether specific measures of care correlate with levels of glycemic control.

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An estimated 20.8 million Americans—7% of the population—have diabetes.¹ This proportion is expected to increase 198% to encompass 11.5% of the population by 2050.^{2,3} According to 2002 data, total direct and indirect costs of managing diabetes were \$132 billion—twice the cost of care of an otherwise-matched nondiabetic patient population.⁴

Because the burden of diabetes is largely derived from long-term microvascular and macrovascular complications, the American Diabetes Association (ADA) standards of care reflect a multifaceted approach directed at smoking, glycosylated hemoglobin (A1C), blood pressure (BP), and lipid treatment targets to impact vascular consequences.⁵ Early, aggressive care targeted at A1C control can delay or abate the advent of complications.⁶⁻⁹ Nationally recognized statistics provide insight into the impact of controlling glucose, BP, and lipids on complications¹⁰: for every 1% decrease in A1C, microvascular complications are reduced by 40%; effective BP control can impact macrovascular disease by 33% to 50% and microvascular disease by 33%; and cholesterol management can decrease cardiovascular complications by 20% to 50%.

To provide physicians with resources that support consistent delivery of multifaceted quality care, the National Committee for Quality Assurance and the ADA created the Diabetes Physician Recognition Program (DPRP) in 1997.¹¹ Using established measures of care, participating providers collect data on diabetic patients. Providers who meet or exceed national performance thresholds receive public recognition for providing care according to evidence-based measures. Providers recognized by DPRP may gain health plan support in the form of data collection assistance, pay-for-performance incentives, offset application fees, and entry into high-performance networks.

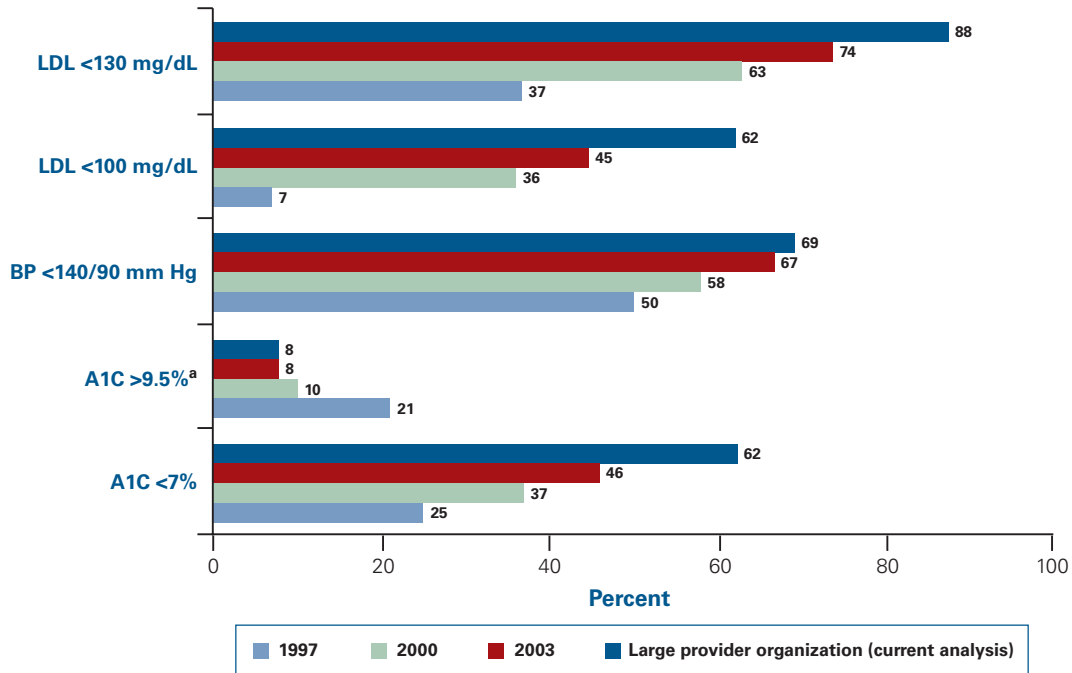
METHODS

In a large Midwest provider organization, we examined care related to DPRP standards through a retrospective chart review of patients with diabetes, looking at treatment patterns, diabetes-related complications, and clinical goal achievement among patients stratified into groups of good (A1C <7%), fair (A1C 7%-9%), and poor (A1C >9%) glycemic control. Based on DPRP methodology, participants aged ≥ 5 years with a diabetes diagnosis and/or notation of

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Diabetes Physician Recognition Program

■ **Figure.** Diabetes Physician Recognition Program Performance Over Time



A1C indicates glycosylated hemoglobin; BP, blood pressure; LDL, low-density lipoprotein.

^aPoor control is defined as A1C >9% in this analysis, as per the Diabetes Physician Recognition Program measures.

prescribed insulin or oral hypoglycemics/antihyperglycemics for ≥ 12 months were included. Fourteen DPRP physicians from the provider organization volunteered to participate. Eligible patients were sequentially identified by using DPRP sampling criteria. An estimated sample size of 411 charts was required to detect a difference in A1C control. Oversampling was built in to account for unavailable/missing charts. Each physician identified a minimum of 34 patients for review, resulting in 501 charts collected and analyzed.

The study protocol was approved by the New England Institutional Review Board. Medical records from 2005-2006 were reviewed to collect demographics and clinical measures, including diabetes type, comorbidities, risk factors, target organ damage, measures of diabetes care, laboratory data, and prescribing patterns. Statistics were generated to assess demographic and clinical variables, with subanalyses conducted for the 3 cohorts. Only patients with A1C values in their charts were included in this subanalysis. Results were assessed according to treatment guidelines established by ADA standards,⁵ The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7),¹² the Third Report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel [ATP] III),¹³ and Healthcare Effectiveness Data and Information Set and DPRP standards.

RESULTS

Most patients (490 of 501) had type 2 diabetes. Mean age was 62 years (SD ± 12.7 years), with 40.9% of patients aged >65 years. More than half were male (55.5%), and 88.0% were overweight or obese (mean body mass index of 33.0 kg/m²). Almost all had ≥ 1 comorbidity, most commonly hypertension (98.4%), hyperlipidemia (73.3%), and cerebrovascular disease (40.3%). Most (71.3%) had diabetes, hypertension, and hyperlipidemia. The average number of physician visits was 4.4 per year (range, 1-20 visits).

Overall Achievement of Diabetes Care Measures

More than 90% of the patients received appropriate assessments, except urinalysis to assess nephropathy (74.3%) and an eye exam (47.1%). Rates for these assessments were below the minimum DPRP criteria of 80% and 60%, respectively. Additionally, 375 (74.9%) patients received weight loss counseling. All 3 values (A1C, low-density lipoprotein [LDL], and BP) were recorded for 434 (86.6%) patients. The majority achieved control levels recommended by national treatment guidelines. Mean A1C was 6.9% (SD $\pm 1.3\%$), consistent with ADA's goal of $<7\%$; 62.4% of patients achieved this level. Mean LDL was 94.1 mg/dL (SD ± 31.8 mg/dL), consistent with ATP III's goal of <100 mg/dL; 62.1% of patients achieved this level. Although mean BP in this group (129.7/76.4 mm Hg) was consistent with JNC 7 recommendations for diabet-

■ TRENDS FROM THE FIELD ■

Table. Level of DPRP Diabetes Care Achievement by A1C Subgroup^a

| Variable | Subgroup 1 (A1C <7%) ^b | Subgroup 2 (A1C 7%-9%) ^c | Subgroup 3 (A1C >9%) ^d |
|---|------------------------------------|-------------------------------------|-----------------------------------|
| A1C control | | | |
| Proportion of patients with A1C testing | 303 (100) | 145 (100) | 38 (100) |
| A1C measurement, mean (SD) | 6.1 (0.6) | 7.6 (0.5) | 10.2 (1.0) |
| BP control | | | |
| Proportion of patients with BP testing | 302 (99.7) | 143 (98.6) | 38 (100) |
| BP measurement, mean (SD) | 128.6 (16.8)/ 75.9 (11.3) mm Hg | 131.7 (15.6)/ 77.2 (10.2) mm Hg | 132.1 (17.3)/ 77.4 (9.5) mm Hg |
| Cholesterol control | | | |
| Proportion of patients with LDL testing | 274 (90.4) | 135 (93.1) | 35 (92.1) |
| LDL measurement, mean (SD) | 93.8 (29.2) mg/dL | 89.9 (32.7) mg/dL | 119.2 (37.6) mg/dL |
| Eye exam | 139 (45.9) | 72 (49.7) | 22 (57.9) |
| Documented foot exam without shoes and socks | 302 (99.7) | 143 (98.6) | 38 (100) |
| Urinalysis (type not specified) | 234 (77.2) | 107 (73.8) | 25 (65.8) |
| Smoking status and cessation advice or treatment (for smokers) | 19/21 (90.5) | 4/4 (100) | 2/2 (100) |

A1C indicates glycosylated hemoglobin; BP, blood pressure; DPRP, Diabetes Physician Recognition Program; LDL, low-density lipoprotein.

^aValues are number (%) unless otherwise indicated.

^bn = 303.

^cn = 145.

^dn = 38.

ics (<130/80 mm Hg), only 37.2% achieved this level. Not surprisingly, multiple comorbidities worsened levels of control. Only 62 of 434 patients (14.3%) with A1C, BP, and LDL values recorded achieved all 3 goals. Despite these levels, 29.3% of patients (n = 147) had documentation of a diabetes-related complication, most commonly some form of kidney disease (78 had microalbuminuria, 2 had macroalbuminuria, and 28 had a nephropathy diagnosis), followed by retinopathy (33 patients). As shown in the **Figure**, DPRP performance was consistent with the overall trend toward greater measure attainment and improved patient care over time.¹⁴ Among DPRP physicians, the rate of A1C control (<7%) improved from 37% to 46% from 2000 to 2003 and was reported at 62% in this provider organization. Similar improvement was seen for LDL and BP control.

Overall Treatment Patterns

Although most patients received antihyperglycemic medication therapy, 12.8% with diabetes alone, 11.2% with comorbid hypertension, and 7.1% with comorbid hyperlipi-

demia received no medication. Most received monotherapy or therapy with only 1 therapeutic class of antihyperglycemics (40.1%), followed by dual therapy (30.3%). Patients with diabetes and comorbid hypertension were more likely to receive dual antihypertensive therapy (30.4%) or triple therapy (30.2%) than monotherapy (28.2%), whereas most with comorbid hyperlipidemia received antihyperlipidemic monotherapy (76.6%).

Achievement of Measures and Treatment Patterns by Subgroups

To assess differences in care, the data were further analyzed by subgroups based on the mean A1C level achieved: in subgroup 1, A1C was <7% (n = 303); in subgroup 2, A1C was 7% to 9% (n = 145); in subgroup 3, A1C was >9% (n = 38). The subgroups were similar with respect to age, race, body mass index, and comorbidities. The mean number of physician visits was lowest in subgroup 1 (4.3 visits), followed by subgroup 2 (4.4 visits), and subgroup 3 (5.4 visits). Examination of DPRP measures for diabetes care demonstrated that most patients in

all 3 subgroups received appropriate disease assessment for A1C, BP, LDL, and foot exams. However, no subgroup achieved the minimum DPRP criteria for eye exams, smoking, or urinalysis (Table).

A general trend of worsening hypertension and hyperlipidemia control was observed for patients with poorer A1C control. In subgroup 3 (mean A1C 10.2%), mean systolic BP was slightly higher than the JNC 7 goal for patients with diabetes (132.1/77.4 mm Hg), and mean LDL exceeded the ATP III goal (119.2 mg/dL). Across all 3 subgroups, only about one third of patients achieved BP <130/80 mm Hg; more in subgroups 1 and 2 achieved BP <140/90 mm Hg than in subgroup 3. Similarly, the proportion achieving LDL <100 mg/dL decreased from 63.0% in subgroup 1 to 35.3% in subgroup 3; whereas more patients in all subgroups achieved LDL <130 mg/dL, relatively fewer achieved this goal in subgroup 3.

DISCUSSION

Our results demonstrate that the level of diabetes care in the large provider organization met commonly accepted measures of care. Physicians in this group performed better than the historic DPRP performance from 1997 to 2003 (as shown in the Figure),¹⁴ although the small sample size of reporting physicians in this study should be noted. The overall trend seen in DPRP indicates such programs may improve quality of care. Their value is providing not only resources to consistently measure care, but also a positive method to promote quality of care. Providers gain value from public recognition of their quality of care and receive preferred provider status or financial incentives in some quality initiatives. Diabetes Physician Recognition Program specifically focuses on goal attainment for LDL, A1C, and BP because these have been linked to improved clinical outcomes in diabetic patients.^{6-9,15} Diabetes Physician Recognition Program performance measures are based on national guidelines, establishing a link between nationally recognized recommendations and actual clinical practice. Diabetes Physician Recognition Program's impact on improving measures of care is well documented; participating DPRP providers show 50% to 100% improvements in screening rates for nephropathy and lipids as well as improved BP and LDL control.¹¹

Although control rates and process measures were consistent with national treatment goals and DPRP measurement criteria, they highlight opportunities to improve diabetes care. For example, fewer than 15% of patients with comorbid diabe-

Take-Away Points

A retrospective chart review collected clinical data on patients with diabetes to assess the level of care according to the Diabetes Physician Recognition Program (DPRP) recommendations.

- Almost all DPRP recognition measures were met and/or exceeded.
- The majority of patients achieved the glycosylated hemoglobin, blood pressure, and low-density lipoprotein control levels recommended by national treatment guidelines, although fewer than 15% were at goal with all 3 measures.
- Further research may determine whether these results are reproducible and whether specific measures of care correlate with levels of glycemic control.

tes, hypertension, and hyperlipidemia were at goal with all 3 measures. Additionally, stratification by level of A1C control demonstrated that the level of BP and LDL control worsened in patients with poor A1C control (>9%). The proportion of patients with LDL <100 mg/dL, in particular, dropped from as high as 65% to 35% of patients with poor A1C control. Although not as steep a decline, BP <140/90 mm Hg worsened as A1C control worsened. Interestingly, despite the fact that patients in the poor A1C control subgroup had worse mean A1C, systolic and diastolic BP, and mean LDL, more patients in this subgroup received the recommended testing (A1C, BP, LDL, eye exams, and diabetic foot exams). These patients were not substantially different from the good and moderate A1C subgroups in terms of level of comorbid hypertension or hyperlipidemia, but did have a higher incidence of risk factors or target organ damage (family history, heart failure, premature cardiovascular disease, and smoking). As expected, more patients in the poor A1C subgroup received dual or triple antihyperglycemic medication therapy; unexpectedly, however, more patients in this group received no antihypertensive or antihyperlipidemic medication therapy. These findings may indicate a subset of patients inherently difficult to treat and a potential role for more aggressive medication therapy in these patients with suboptimal A1C control (>9%) may benefit from additional treatment to lower cardiovascular risk.

Limitations to this analysis should be noted:

- Data collected from medical charts may be inherently limited by lack of documentation of tests, medications, or lab values in the chart.
- Medications identified in the charts were those that were prescribed; whether patients actually received the medication and level of adherence are unknown.
- Because data were obtained from 1 provider group in 1 state, results may not be representative of other DPRP-reporting physicians or patients under their care.
- Because there was no control group, a causal relationship between the DPRP and improvements in diabetes care cannot be proven.
- Participating physicians were identified on a volunteer basis and may not be reflective of all physicians in the provider organization.

TRENDS FROM THE FIELD

- Due to stratification by A1C level, the sample size of subgroup 3 (A1C >9%) was relatively small; thus, caution should be taken when extrapolating results from this subgroup.

Still, this study identifies opportunities for improving diabetes care, including aggressive pharmacotherapy to control comorbidities that may increase cardiovascular risk. Using more than 1 class of antihyperglycemic medication to achieve A1C <7% in accordance with ADA treatment recommendations,⁵ using new medications with novel mechanisms of action, or targeting different physiologic causes of diabetes also may help reduce the number of patients not at A1C goal. Weight management also should be addressed. Excessive weight can hamper drug treatment efforts by increasing insulin resistance and glucose intolerance.¹⁶ Future initiatives should incorporate weight reduction in an effort to mitigate the negative metabolic consequences of excess weight and further improve outcomes.

As guidelines and recommendations are updated to accommodate changes in patient population and treatment modalities, it is important to measure care against these guidelines to validate quality, compare benchmarks with other organizations, and receive recognition by healthcare stakeholders such as employers. Attaining standardized measures is important not only to provide quality care but also to mitigate costs of care and provide financial resources to those responsible for attaining goals. These results reveal differences in control levels and treatment patterns in patients with varying levels of glycemic control and opportunities to improve diabetes care through goal attainment. Further research is needed to determine whether these results are reproducible in other physician groups and to identify whether specific measures of care correlate with levels of glycemic control.

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