

Performance of the Provider Recognition Program's Survey to Assess Patient Satisfaction With the Provision of Diabetes Care in Primary Care

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Objective: To measure, for the first time, the performance of the American Diabetes Association–National Committee for Quality Assurance Provider Recognition Program (PRP) survey in assessing patient satisfaction with the provision of diabetes care.

Study Design: Postal survey.

Patients and Methods: The PRP survey satisfaction questions and the Diabetes Treatment Satisfaction Questionnaire were mailed to a random sample of 607 patients with diabetes attending 3 medical practices (63 primary care providers), with an additional mailing to nonresponders.

Results: On face validity, the PRP survey incompletely addressed satisfaction with the provision of diabetes care. The response rate was 67%. The items in the PRP survey were correlated internally (Cronbach α coefficient = .89) and with the Overall Satisfaction scale ($r = 0.40-0.56$; $P < .001$ for all) of the Diabetes Treatment Satisfaction Questionnaire (concurrent validity). The instrument was skewed toward satisfaction. After recoding all less-than-totally satisfied responses as expressing dissatisfaction, 25% of the surveys indicated dissatisfaction with diabetes care.

Conclusions: The PRP patient satisfaction survey is an internally consistent and valid measure of patient satisfaction. However, it is incomplete and skewed toward satisfaction. Development of a patient dissatisfaction metric might play a more significant role in orienting quality improvement efforts and benchmarking.

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accountability or quality improvement sets.

Consistent with the recommendations of the Diabetes Quality Improvement Project, the jointly sponsored American Diabetes Association–National Committee for Quality Assurance Provider Recognition Program (PRP) includes 5 questions to measure patient satisfaction with the provision of diabetes care by a health system. These questions seem to be limited in the number of patient satisfaction dimensions addressed.⁵ In addition, one question (“How satisfied are you with this health center in terms of concern, courtesy, respect, and sensitivity shown to you?”) addresses 4 different aspects of patient–health personnel interactions, limiting the interpretation of responses to this item and their reflection of any of these aspects. To our knowledge, there are no published studies of the performance of this instrument.

Our objective was to evaluate the performance of the PRP survey questions in assessing patient satisfaction with diabetes care in a primary care setting.

... METHODS ...

Participants and Setting

This validation study was part of the initial efforts of the Mayo Health System Diabetes Translation Project to assess the impact of models of care on the

The role of patient satisfaction assessment is evolving. Traditionally, satisfaction has been measured to support marketing strategies in competitive healthcare delivery environments. Recently, benchmarking organizations have included patient satisfaction as an indicator of high-quality diabetes care.¹ However, there are methodological challenges involved in measuring quality of care and, in particular, in measuring patient satisfaction with diabetes care.^{2,3} The Diabetes Quality Improvement Project⁴ suggested that satisfaction is a key performance measure, although further “field study” has been recommended before its definite inclusion in

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overall quality of diabetes care in the community.⁶ The Mayo Health System is a large network of healthcare organizations within a 320-km radius of the Mayo Clinic in Rochester, MN. Three primary care sites with 63 providers in the Mayo Health System in Wisconsin and Minnesota participated in this study. Administrative databases from each site were used to identify patients 18 years or older with diabetes using billing codes from the *International Classification of Diseases, Ninth Revision*. A total of 6067 patients were identified as having primary or secondary diagnoses indicative of diabetes mellitus (codes 250.00-250.93) between January 1, 1994, and December 31, 1996. Using a modification of the strategy recommended by the PRP, any visit between October 1, 1996, and December 31, 1996, was designated as an index visit. A total of 1923 patients diagnosed as having diabetes for at least 1 year (confirmed by medical record review) and having at least one additional visit 12 months or more before the index visit were designated as "attending patients" and were eligible for study. From the group of attending patients, 607 were randomly selected, with equal representation from each practice site. The demographic characteristics of this cohort were determined using a previously reported technique of medical record audit.^{6,7}

Satisfaction Questionnaires

The 5 patient satisfaction questions of the PRP survey were presented in their original order as part of a larger 8-item survey to measure patient satisfaction with the provision of diabetes care (**Appendix**).⁸

The Diabetes Treatment Satisfaction Questionnaire (DTSQ) is an 8-item inventory that has been validated previously in patients with type 1 and type 2 diabetes mellitus⁹ and assesses patient satisfaction with diabetes treatment. The internal consistency measured using the Cronbach α coefficient has been reported to vary from .75 to .89.⁹ Each item uses a 7-point numerical analog scale from 0 to 6. The inventory is divided into an Overall Satisfaction scale, a Frequency of Unacceptable Hyperglycemia item, and a Frequency of Unacceptable Hypoglycemia item. The Overall Satisfaction scale is the sum of the responses to items 1, 4, 5, 6, 7, and 8. This score ranges from 0 to 36, with a higher score indicating greater satisfaction. Patient perception of the frequency of unacceptable hyperglycemia and hypoglycemia is reflected in the responses to item 2 (hyperglycemia) and item 3 (hypoglycemia), with a score ranging from 0 to 6 for each item and a higher

score indicating greater perceived frequency of both conditions. This inventory was chosen as the reference standard to test concurrent validity of the PRP survey. This choice was based on the assessment that there is a common construct underlying the determination of satisfaction with both diabetes treatment and provision of diabetes care. In other words, it is likely that patients satisfied with their diabetes treatment will also be satisfied with the provision of diabetes care. The DTSQ, as with most other satisfaction questionnaires, is said to be skewed toward satisfaction (also referred to as having a ceiling effect or exhibiting high-end bias) and, thus, might not be responsive to further improvements in satisfaction when satisfaction is high at baseline.¹⁰⁻¹² Although some solutions have been proposed,¹³ the aim of this study was to assess the performance of the PRP survey as a benchmarking measure of the attending cohort's satisfaction at a single point in time and not to evaluate changes over time. Anticipating that both the DTSQ and the PRP survey will be skewed toward satisfaction, a novel metric of the degree of satisfaction was defined for each item on the DTSQ and the PRP survey. A response of 1 through 6 on item 2 (hyperglycemia) and item 3 (hypoglycemia) on the DTSQ and of 0 to 4 on each item on the PRP survey was scored as less than maximally satisfied or "dissatisfied." We identified the "worst score" on the PRP (the lowest score across all 5 items) as an additional metric of dissatisfaction. This is justified by the construct in which dissatisfaction is at the low end of the satisfaction continuum—any decrease from the maximum score suggests less than perfect satisfaction.

Measurement of Functional Health Status

To better characterize the patient's perceived health status profile, patients were asked to complete the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) at the time they completed the satisfaction surveys. The SF-36 is a previously validated and widely used 36-item inventory that measures functioning and well-being.¹⁴

Administration of Surveys

During the first quarter of 1998, each patient was mailed the DTSQ, the PRP survey, and the SF-36, with a cover letter explaining the initiative to improve the provision of care for people with diabetes and the importance of their response to the health center. One month later, nonresponders were sent a second set of questionnaires. Death or migration out of the area was confirmed by con-

tacting the primary care provider, the family, or the hospital-regional death registry. The research protocol and consent procedures were approved by the institutional review board or ethics committee at the participating institutions and the Mayo Foundation.

Analysis and Statistical Methods

The internal consistency of the PRP survey was tested by calculating the Cronbach α coefficient. To test concurrent validity, we calculated the correlations between patient responses to the DTSQ and to the PRP survey using the Spearman correlation coefficient. Dissatisfaction and worst score were compared using the Fisher exact test. Missing responses to items from the DTSQ or PRP survey were excluded from analysis. Results are summarized as median (range) for all continuous variables and as number (percentage) for all nominal/ordinal data. Because so many comparisons were performed, defining statistical significance at $P < .05$ was not appropriate. The Bonferroni adjustment of .001 was considered excessively conservative¹⁵ because many items on the DTSQ, PRP survey, and SF-36 were highly correlated. Therefore, statistical significance was defined at $P < .01$, and P values are shown in all instances.

ders and nonresponders were similar in demographic characteristics, health status, glycemic control, diabetes treatment, and complications (Table 1).

Instrument Performance

In the returned surveys, item completion for the Overall Satisfaction scale of the DTSQ was universal, and more than 98% of the Frequency of Unacceptable Hypoglycemia and Frequency of Unacceptable Hyperglycemia items were completed. The standardized Cronbach α coefficient for the instrument was .83. As suspected, the DTSQ was skewed toward satisfaction: the Overall Satisfaction scale median score was 30 (range, 3-36). The Frequency of Unacceptable Hyperglycemia and Frequency of Unacceptable Hypoglycemia items were also skewed toward satisfaction (Figure).

In addition, all 5 items on the PRP survey were skewed toward satisfaction (Figure). The standardized Cronbach α coefficient for the 5 items was .90. Items were completed in 95.5% to 99.7% of returned surveys. For each question, 13.2% to 24.6% of respondents scored 0 to 4 (dissatisfied); the least dissatisfaction was for item 5, which asked about concern, courtesy, respect, and sensitivity. When the scores for each question were used to classify the sample into satisfied and dissatisfied groups, the results were

... RESULTS ...

Response Rate and Patient Characteristics

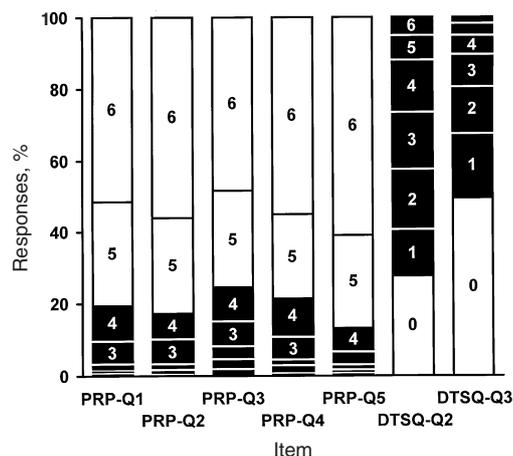
Of the 607 patients, 27 had died, 6 had migrated out of the area without providing a forwarding address, 10 were unable to complete the surveys because of their mental status (eg, Alzheimer's disease), and 4 refused to complete the surveys because they believed that they did not have diabetes despite evidence to the contrary in their medical records. Excluding these 47 individuals, the survey response rate after the 2 mailings was 67% (375 patients). Survey respon-

Table 1. Characteristics of Survey Responders and Nonresponders

	Responders (n = 375)	Nonresponders (n = 185)	P
Male, %	42	38	.52
Age, median (range), y	69 (22-94)	71 (28-99)	.36
Body mass index, median (range), kg/m ²	30.6 (10.7-77.0)	31.6 (14.9-48.0)	.46
Tobacco user, %	9	9	.87
Currently in a nursing home, %	0.53	2	.10
Hospitalized in the preceding 2 y, %	53	55	.72
Receiving dialysis, %	0.27	0.54	.55
SMBG use, median (range)*	198 (20-395)	207 (25-401)	.81
Diabetes treatment regimen, %			.56
Diet only	14	19	
Oral agent only	44	43	
Insulin only	37	33	
Insulin and oral agent	5	5	
Most recent glycosylated hemoglobin value, median (range)	7.3 (4.2-13.6)	7.4 (4.5-16.0)	.47

*Number of self-monitored blood glucose (SMBG) instances recorded per month per patient.

Figure. Distribution of Responses to Items on the American Diabetes Association–National Committee for Quality Assurance Provider Recognition Program (PRP) Patient Satisfaction Survey and the Hyperglycemia (Q2) and Hypoglycemia (Q3) Items of the Diabetes Treatment Satisfaction Questionnaire (DTSQ)



Black = dissatisfaction (score of 0 to 4 on the PRP satisfaction questions and 1 to 6 on the DTSQ); Q = item number.

similar. The results for the overall satisfaction with diabetes care item (item 1 of the PRP) are shown in **Table 2**. Patients expressing dissatisfaction had lower scores in the Social Functioning ($P = .003$), Bodily Pain ($P = .001$), General Mental Health ($P < .001$), Vitality ($P < .001$), Health Perception ($P < .001$), and Mental Health Component ($P < .001$) scales of the SF-36 compared with those who seemed satisfied with the care received. In addition, patients who expressed dissatisfaction with the way their questions about diabetes were answered (item 2) expressed more role limitations due to physical ($P < .001$) and emotional ($P = .001$) problems.

The Overall Satisfaction With Diabetes Care item in the PRP survey was significantly correlated with the Overall Satisfaction With Treatment scale of the DTSQ ($r = 0.56$; $P < .001$) and with the Frequency of Unacceptable Hyperglycemia item ($r = 0.16$; $P = .002$). No correlation with the Frequency of Unacceptable Hypoglycemia item of the DTSQ was observed ($r = 0.02$; $P = .75$). Similarly, all items in the PRP survey were significantly correlated with the Overall Satisfaction With Treatment scale ($r = 0.40$ - 0.56) and the Frequency of Unacceptable Hyperglycemia item ($r = 0.11$ - 0.19) of the DTSQ, whereas none were significantly correlated with the Frequency of Unacceptable Hypoglycemia item ($r =$

-0.01 to 0.05) (**Table 3**). The only exception, satisfaction with concern, courtesy, respect, and sensitivity (item 5 on the PRP survey), was not significantly correlated with the Frequency of Unacceptable Hyperglycemia item (**Table 3**). We explored the correlation between the PRP survey worst score and measures of dissatisfaction constructed on the DTSQ (scores of 1 to 6 on the Frequency of Unacceptable Hyperglycemia and Frequency of Unacceptable Hypoglycemia items). The PRP survey worst score was correlated with the Frequency of Unacceptable Hyperglycemia item ($r = 0.28$; $P < .001$) but not with the Frequency of Unacceptable Hypoglycemia item ($r = 0.09$; $P = .08$).

... DISCUSSION ...

We evaluated the performance of the satisfaction questions of the PRP survey in measuring patient satisfaction with the provision of diabetes care. This survey seems incomplete at face value, and at least one item is poorly constructed. The survey's components seem internally consistent, however, and the instrument exhibits concurrent validity with the DTSQ.

This study has some limitations. Patients were identified using an administrative database that has not been evaluated for its integrity, making it impossible to ascertain how many patients with diabetes were not identified. Patients missed by our strategy might represent a different group with a different satisfaction profile. Ascertainment of cases is not fraught with this problem because we reviewed the clinical records to identify them. Our patient selection criteria were compatible with the PRP definition of attending patients, which excludes patients who might be under the care of one of the practices surveyed but might not be compliant with care and, hence, might be experiencing a different level of satisfaction. This limitation also applies to the PRP benchmarking efforts, including their patient satisfaction survey strategy. Although measurable characteristics in both responders and nonresponders were similar, we cannot exclude that certain immeasurable or nonmeasured characteristics of nonresponders could be linked to patient satisfaction or dissatisfaction with diabetes care. Few validated surveys have been designed to measure patient satisfaction with healthcare delivery. The Diabetes Clinic Satisfaction Questionnaire has been reported to have some utility,⁹ but in pilot studies using this questionnaire (S. A. Smith, MD, unpublished data,

Table 2. Characteristics of Satisfied and Dissatisfied Responders to the ADA-NCQA PRP Patient Satisfaction Survey

	Satisfied* (n = 286)	Dissatisfied* (n = 69)	P
Male, %	43	41	.79
Age, median (range), y	70 (22-94)	66 (30-88)	.03
Body mass index, median (range), kg/m ²	30.2 (10.7-77.0)	30.9 (24.7-37.7)	.89
Tobacco user, %	8	25	.12
Currently in a nursing home, %	0.35	2	.35
Hospitalized in the preceding 2 y, %	52	58	.42
Receiving dialysis, %	0.35	0	>.99
SMBG use, median (range) [†]	206 (20-393)	197 (33-395)	.51
Diabetes treatment regimen, %			.33
Diet only	13	13	
Oral agent only	46	41	
Insulin only	36	45	
Insulin and oral agent	5	1	
Most recent glycosylated hemoglobin value, median (range)	7.3 (4.2-13.6)	7.6 (4.5-12.8)	.27
SF-36 scale score, median (range)			
Physical Functioning	60 (0-100)	52.5 (0-100)	.68
Role Limitations Due to Physical Problems	50 (0-100)	29.2 (0-100)	.07
Social Functioning	87.5 (0-100)	75 (0-100)	.003
Bodily Pain	62 (0-100)	42 (0-100)	.001
General Mental Health	80 (8-100)	70 (20-95)	<.001
Role Limitations Due to Emotional Problems	100 (0-100)	66.7 (0-100)	.03
Vitality	55 (0-100)	42.5 (0-85)	<.001
General Health Perception	57 (0-100)	40 (0-87)	<.001
Mental Component	55.7 (12.2-70.5)	48.1 (23.5-64.4)	<.001
Physical Component	37.9 (12.1-64.0)	35.5 (14.8-59.7)	.08

ADA-NCQA PRP = American Diabetes Association–National Committee for Quality Assurance Provider Recognition Program; SMBG = self-monitored blood glucose; SF-36 = Medical Outcomes Study 36-Item Short-Form Health Survey.

*Satisfaction assessment was based on the Overall Satisfaction With Diabetes Care item (item 1) of the PRP survey. A score of 0 to 4 indicates dissatisfaction and a score of 5 to 6 indicates satisfaction.

[†]Number of SMBG instances recorded per month per patient.

2000) we only demonstrated perfect patient satisfaction. Because of this bias, and the rational construct relationship between satisfaction with treatment and healthcare delivery,⁹ we elected to use a more discriminating and validated instrument—the DTSQ. The ability of the DTSQ to detect dissatisfaction, however, is largely untested. Furthermore, concurrent validity across these 2 instruments needs to be related to outcomes associated with dissatisfaction with care (ie, leaving the practice) to achieve predictive validity. This is important because we have concerns about the ability of the 5-question PRP survey to capture the most important aspects of patient satisfaction with the provision of diabetes care.

The PRP considers patient satisfaction to be a crucial indicator of quality of diabetes care.

However, published assessments of satisfaction with healthcare delivery or disease management in diabetes using validated instruments are scarce. A 73-item survey measuring patient satisfaction with diabetes disease management with appropriate face and content validity was recently reported.¹⁶ The low response rate for this survey makes interpretation difficult. A study¹⁷ evaluating satisfaction with diabetes care provided by 2 health systems used the Employee Health Care Value Survey, a nondisease-specific metric. Others¹⁸ have isolated specific elements of the provision of healthcare (ie, patient-physician relationship) and have sought correlations with patient satisfaction. Most other studies^{12,19} focus on satisfaction with diabetes treatment. This is the first study, to our knowledge, of the per-

formance of the satisfaction questions of the PRP survey in the primary care setting.

The PRP survey measures of dissatisfaction (score of 0 to 4 on all questions and worst score) did not correlate with the Frequency of Unacceptable Hypoglycemia item of the DTSQ. One explanation is that the DTSQ, an instrument of satisfaction with diabetes treatment, might be an inappropriate choice of criterion validity for an instrument measuring satisfaction with provision of diabetes care. Lack of patient familiarity with hypoglycemia is another plausible explanation. Alternatively, our dissatisfaction and worst score metric might not reflect true dissatisfaction. It is intuitive, however, that clinicians caring for patients with diabetes might emphasize the need to prevent hyperglycemia and not address or de-emphasize hypoglycemia, which might explain the correlation between the Frequency of Unacceptable Hyperglycemia item of the DTSQ and the dissatisfaction measures of the PRP survey items. The hypothesis that dissatisfaction with care is not related to hypoglycemia because of inappropriate communication of treatment goals (ie, tight glycemic control *and* prevention, prompt detection, and treatment of hypoglycemia) will need to be tested. If confirmed, measures of patient dissatisfaction with hypoglycemia frequency and severity alongside measures of compliance with counseling on prompt detection and treatment of hypoglycemia should be included in quality ascertainment tools.

Investigators have suggested that satisfaction with diabetes care is intimately related to disease severity and is lowest when patients' health status is deteriorating or facing a new complication.^{20,21} We used the SF-36, a valid and reliable tool in patients with type 2 diabetes mellitus,²² as a metric of overall functioning and health status and obtained results comparable to those from other studies.^{23,24} More important, patients experiencing greater limitations because of physical or emotional problems might require further support and communication with the healthcare team. Indeed, the association between dissatisfaction with the way that questions about diabetes were addressed and role limitation scales in the SF-36 affirms this construct. Of interest, functioning and health status in diabetes seem not to be related to glycemic control or glucose self-monitoring, a shared characteristic with satisfaction measures.^{12,19,23}

Dissatisfaction might represent the low end of the satisfaction continuum or a completely different and coexisting dimension.²⁵ Patients who report satisfaction with the provision of care in surveys commonly express dissatisfaction with certain aspects of it during in-depth interviews or focus group sessions.^{21,26} Some researchers²⁵ have suggested that this is a consequence of the way surveys are phrased to gather information about satisfaction. Unfortunately, providers informed only by patient satisfaction surveys (frequently fraught with high-end bias) might be less inclined to initiate and maintain quality improvement programs. Moreover, they might be

Table 3. Spearman Correlation Coefficient Between the DTSQ Scales and the ADA-NCQA PRP Patient Satisfaction Survey Items, Including the Worst Score

PRP Survey Items	DTSQ Items					
	Overall Satisfaction Scale (Q1 + Q4-Q8)		Hyperglycemia (Q2)		Hypoglycemia (Q3)	
	Correlation Coefficient	P	Correlation Coefficient	P	Correlation Coefficient	P
Overall care (Q1)	0.56	<.001	0.16	.002	0.02	.75
Questions answered (Q2)	0.48	<.001	0.15	.006	-0.01	.79
Access in emergencies (Q3)	0.42	<.001	0.17	.002	0.002	.97
Explanations of tests (Q4)	0.49	<.001	0.19	<.001	0.04	.48
Concern, courtesy, respect (Q5)	0.40	<.001	0.11	.04	0.05	.38
Worst score (across all questions)	0.62	<.001	0.28	<.001	0.09	.08

DTSQ = Diabetes Treatment Satisfaction Questionnaire; ADA-NCQA PRP = American Diabetes Association–National Committee on Quality Assurance Provider Recognition Program; Q = item number.

less likely to detect and address certain aspects of the provision of care that lead to patient dissatisfaction. Calculation of a worst score for the PRP survey questions and analysis of the data by classifying all scores of 0 to 4 as dissatisfied afforded us the opportunity to observe dissatisfaction. These manipulations are in line with the construct that dissatisfaction represents the low end of a satisfaction continuum. The development of instruments that directly assess dissatisfaction, as a separate entity, represents a challenge not yet met.

In conclusion, we assessed the performance of the PRP survey questions used to measure patient satisfaction with diabetes care in the primary care setting. Our study results suggest that the PRP patient satisfaction survey needs further refinement to improve the face validity of each item and to reassure health centers seeking American Diabetes Association–National Committee for Quality Assurance Diabetes Provider Recognition that they are actually measuring patient satisfaction when using this tool. We suggested some additional items (items 6, 7, and 8 in Appendix) and recodification of the item scores (scores of 0 to 4 as dissatisfied and 5 to 6 as satisfied) to capture dissatisfaction. Additional research is required to determine the optimal number of dimensions of satisfaction to measure in benchmarking efforts. Dissatisfaction surveys and measurements of compliance with the implementation of hypoglycemia prevention programs might need to be added to the measuring toolbox used to assess the quality of diabetes care.

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Appendix. The ADA-NCQA PRP Modified Patient Satisfaction Survey*

Thinking about the care you have received during the past 12 months, how would you rate this health center on each of the following? Circle one number for each question.

During the past 12 months . . .

1. How satisfied are you with this health center in terms of overall care of your diabetes?

6 5 4 3 2 1 0
Very satisfied Very dissatisfied

2. How satisfied are you with the way your questions about your diabetes were answered?

6 5 4 3 2 1 0
Very satisfied Very dissatisfied

3. How satisfied are you with the ease of reaching someone at this health center in an emergency?

6 5 4 3 2 1 0
Very satisfied Very dissatisfied

4. How satisfied are you with the way your test and laboratory results were reviewed and explained?

6 5 4 3 2 1 0
Very satisfied Very dissatisfied

5. How satisfied are you with this health center in terms of concern, courtesy, respect, and sensitivity shown to you?

6 5 4 3 2 1 0
Very satisfied Very dissatisfied

6. How satisfied are you with the ease of scheduling appointments?

6 5 4 3 2 1 0
Very satisfied Very dissatisfied

7. How satisfied are you with the way the staff at this health center coordinates the team effort?

6 5 4 3 2 1 0
Very satisfied Very dissatisfied

8. Would you recommend this health center to your family or friends if they needed diabetes care?

6 5 4 3 2 1 0
Yes, I would definitely recommend this health center. No, I would definitely not recommend this health center.

Please make sure that you have circled one number for each question.

ADA-NCQA PRP = American Diabetes Association–National Committee on Quality Assurance Provider Recognition Program.

*The PRP survey, as produced by the ADA-NCQA, includes only the first 5 items, with the last 3 items representing additions made by the authors.