

Attitudes of Primary Care Providers Toward Diabetes

Barriers to guideline implementation

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OBJECTIVE — Primary care providers have been slow to adopt standards of care for diabetes, and continuing medical education (CME) programs have been minimally effective in changing provider behavior. The objective of this study was to explore the previously reported finding that attitudes, rather than knowledge, may impede primary care provider adherence to standards of care.

RESEARCH DESIGN AND METHODS — Study participants included 31 primary care providers attending an eight-session CME program on diabetes. Providers rated on a 10-point scale how the treatment of diabetes compared with that of five other chronic conditions (hypertension, hyperlipidemia, angina, arthritis, and heart failure; 1 = easier to 10 = harder; midpoint 5.5). In a subsequent open-ended qualitative interview, providers explained their scale ratings.

RESULTS — Diabetes was rated as significantly harder to treat than hypertension (24 of 30 >5.5; $P < 0.001$) and angina (20 of 30 >5.5; $P = 0.03$). A majority also rated hyperlipidemia (18 of 30) and arthritis (18 of 30) as easier to treat than diabetes. Explanatory themes underlying provider frustrations with diabetes include characteristics of the disease itself and the complexity of its management, and a perceived lack of support from society and the health care system for their efforts to control diabetes.

CONCLUSIONS — CME that addresses provider attitudes toward diabetes in addition to updating knowledge may be more effective than traditional CME in promoting adherence to standards of care. Additional changes are needed in our health care system to shift from an acute to a chronic disease model to effectively support diabetes care efforts.

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Although standards of care for diabetes have been widely disseminated since the late 1980s (1), primary care providers have been slow to adopt the recommended screening guidelines (2–7). Continuing medical education (CME), generally based on the transfer of new medical information, has been minimally effective in changing provider practice behaviors regarding diabetes (8). Some research sug-

gests that provider beliefs and attitudes, not knowledge deficits, are the major barriers to preventive screening practices in diabetes, and that medical training and CME must address these to be effective (9,10). Yet, while there is an extensive literature on patient beliefs and attitudes that affect adherence to recommended treatment regimens (11), little is known, by comparison, about provider beliefs and

attitudes that may interfere with their adherence to current standards of care (9,10,12–14).

Contradictions noted in the literature on the diabetes-related beliefs and behaviors of health care providers merit further inquiry. Although physicians generally agree that tight glucose control is important in diabetes (12), their practice behaviors are inconsistent with this belief (2–7). Lack of adherence to guidelines for both glycemic control and complication screening may relate to the belief that diabetes complications are inevitable and cannot be prevented (15) or that type 2 diabetes is not a serious disease requiring aggressive treatment (9,12). In fact, Kenny et al. (3) report that physician adherence to consensus recommendations for complication screening is lower for patients with type 2 diabetes than for patients with type 1 diabetes.

These findings suggest that it is particularly important to understand the attitudes of primary care providers about the treatment of type 2 diabetes. Of diabetic patients, >90% suffer from type 2 diabetes (16), a majority of patients with diabetic end-stage renal disease have type 2 diabetes (17,18), and some of the complications of diabetes (periodontal, cardiovascular, foot) are more common in older type 2 patients (3). Primary care providers have the most negative attitudes about diabetes (12), yet they provide 80% of all office visits for diabetes (16).

To explore the previously reported finding that attitudes about diabetes, rather than knowledge, may impede primary care provider adherence to standards of care, we surveyed and conducted in-depth qualitative interviews with a group of primary care providers working in clinics with a large proportion of type 2 diabetic patients. If attitudes and behaviors are linked, as research suggests, then understanding why providers think and act the way they do is an important first step in the development of more effective interventions that will improve the ability of primary care providers to manage diabetes effectively.

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Abbreviations: CME, continuing medical education.

A table elsewhere in this issue shows conventional and Système International (SI) units and conversion factors for many substances.

Table 1—Demographic characteristics of providers

	Physicians	Mid-level providers*
n	24	7
Internal medicine, family practice, general practice	79 (19/24)	—
Hispanic (Mexican-American or Latin-American)	50 (12/24)	29 (2/7)
Non-Hispanic white	21 (5/24)	42 (3/7)
Other nationality	29 (7/24)	29 (2/7)
Male	83 (20/24)	42 (3/7)
Age (years)	45.4 ± 12.6	40.8 ± 12.9
Years since training	11.5 ± 12.1	14†
Median	6.5	—
Years at present clinic	3.9 ± 5.4	2.1 ± 2.1
Median	1.5	1.7

Data are % (ratio), means ± SD, or medians. *Mid-level providers included five physician assistants and two family nurse-practitioners. †Only one mid-level provider answered this question.

RESEARCH DESIGN AND METHODS

Study site

The research was conducted with primary care providers working in five federally qualified community health centers in the Texas-Mexico border area of south Texas, serving a primarily Mexican-American clientele with low levels of income and education. Most diabetic patients in these clinics have been diagnosed with type 2 diabetes.

Participants

The sample consisted of 31 adult-care providers in the five border clinics who had agreed to participate in an eight-session CME program on diabetes. This represents 91% of all adult-care providers in these clinics. Providers included physicians and mid-level providers (i.e., family nurse-practitioners and physician assistants). Although several of the physicians had subspecialty training, all were engaged in primary care.

Data collection

Primary adult-care providers completed a survey regarding practice behaviors and attitudes surrounding diabetes. Key items on the survey were explored in detail during a subsequent in-depth qualitative interview. The specific goal of the study was to determine attitudes about diabetes treatment that might function as barriers to successful diabetes care in these clinics, so that these might be addressed in the subsequent CME sessions. A broader goal of the study was to gain an in-depth understanding of primary care provider attitudes about

diabetes treatment that may negatively impact diabetes care in a variety of health care settings. Data were collected between July 1994 and June 1995.

Quantitative. Providers marked on a 10-point scale how the treatment of diabetes compared with the treatment of five other chronic diseases (diabetes easier = 1 to diabetes harder = 10; scale midpoint 5.5). The five diseases were hypertension, hyperlipidemia, angina, arthritis, and heart failure. Providers also rated their level of agreement with the following three statements (strongly agree = 1 to strongly disagree = 10): 1) Treatment of hyperglycemia in diabetes is efficacious in preventing diabetes complications such as retinopathy, nephropathy, and foot ulcers, 2) I feel confident that my therapeutic actions/advice result in improved diabetic outcomes, and 3) I have adequate time and resources to effectively treat my diabetic outpatients.

Qualitative. We subsequently conducted in-depth interviews lasting 1–1.5 h with 26 of the 31 providers (20 physicians and 6 mid-level providers). Because of scheduling difficulties and provider turnover, it was not possible to interview the entire group of providers who had completed the survey. These providers had no significant differences on their quantitative scale scores compared with the scores of those providers who did complete the qualitative interviews.

As part of the semistructured interview, providers were asked to expand on their answers to the scale items comparing the treatment of diabetes with that of other diseases, using their completed surveys to elicit

responses. Providers discussed why they had rated diabetes as easier, the same, or harder to treat than each of the other five diseases. They were also asked to expand on their views about the other three scale items.

Analysis

Quantitative. The proportion of respondents above (for the comparisons with other diseases) and below (for levels of agreement with the statements about diabetes care) the midpoint of the scales was calculated. Using the nonparametric quantile test, statistical significance was tested against the assumption that the underlying population would be distributed equally above and below the median.

Qualitative. Interviews were audiotaped, transcribed, and reviewed for accuracy by one of the authors (A.C.L.). To identify a number of recurrent themes regarding provider attitudes toward the treatment of diabetes (19), we performed a content analysis of the qualitative scale responses through multiple close readings of the transcripts. First, we extracted segments of text from the interview data describing why diabetes was easier or harder to treat than other diseases, grouping them by disease. The responses of physicians and mid-level providers were found to be similar and were thus combined for the analysis. Segments of text across the various disease comparisons were then grouped according to theme. To be considered a theme, a topic had to be mentioned by more than one provider and in comparison with more than one disease. The initial categories were developed by the first author (A.C.L.) and reviewed by the second (J.A.P.). The authors then met in a consensus conference to discuss the categories, resolve questions, and refine the data into the final thematic categories.

RESULTS

Quantitative results

Demographic characteristics of providers are shown in Table 1 and results from the scale items are shown in Table 2. Most providers considered diabetes harder to treat compared with other conditions. Diabetes was rated as significantly harder to treat than hypertension (24 of 30 >5.5; $P < 0.001$) and angina (20 of 30 >5.5; $P = 0.03$). A majority also rated it as harder to treat than hyperlipidemia (18 of 30) and arthritis (18 of 30), but the ratings were not statistically significant. All providers agreed

Table 2—Attitudes toward the treatment of diabetes: scale results

	>5.5	5.0 or 5.5	<5.0	P value
Comparison of difficulty of treatment for diabetes with that of other chronic illnesses (1 = easier to 10 = harder)				
Hypertension	80 (24)*	17 (5)	3 (1)	<0.001
Angina	67 (20)*	13 (4)	20 (6)	0.03
Hyperlipidemia	60 (18)*	27 (8)	13 (4)	0.06
Arthritis	60 (18)*	20 (6)	20 (6)	0.06
Heart failure	50 (15)*	20 (6)	30 (9)	0.29
Beliefs about diabetes treatment (1 = strongly agree to 10 = strongly disagree)				
Treatment efficacious	0 (0)	0 (0)	100 (31)	<0.001
Confident in own abilities	3 (1)	19 (6)	77 (24)	<0.001
Enough time and resources	45 (14)	6 (2)	48 (15)	0.29

Data are % (n). P values were determined by the nonparametric quartiles test. *One individual did not answer this set of scales.

that the control of hyperglycemia prevented complications (31 of 31 <5.5; $P < 0.001$), and all but one agreed that their therapeutic actions and advice were effective in improving diabetic outcomes (24 of 31 <5.5; $P < 0.001$). There was much less agreement with the statement "I have adequate time and resources to treat my diabetic patients effectively," with a symmetric distribution around the scale midpoint.

Qualitative results

Themes from the qualitative data are summarized in Table 3 in order of decreasing frequency in the data and are expanded upon below. All statements are summarized from provider interviews and are not the opinion of the authors.

Medication. Providers feel that medications for diabetes are not as effective as those for other chronic conditions. The medications are difficult to regulate because patient response to them fluctuates, and they sometimes increase, rather than decrease, symptoms. In particular, providers are wary of treading the fine line between tight control and hypoglycemia. They noted that it is also more difficult to treat a disease whose medications are directed at controlling an underlying physiological problem rather than simply alleviating symptoms. Finally, providers complained that there were fewer medication alternatives for diabetes than for other chronic conditions. (Note: The study was conducted before the release of metformin, acarbose, and troglitazone.)

Glycemic control. Constant fluctuations in glycemic control, including the effects of diet and activity levels, make diabetes med-

ications especially difficult for providers to adjust. They reported that diabetes is more labor intensive than other conditions because it must be more closely monitored and its medications must be continually adjusted. Constant fluctuations also cause patients to perceive diabetes as "on and off, day by day," so they become lax about following treatment regimens, making the work of providers more difficult.

Lifestyle change. Diabetes is harder for providers to treat than other chronic conditions because its successful management relies to a greater extent on lifestyle change, which is outside provider control. They reported "horrible struggles" with patients because the food restrictions for diabetes are more stringent than for other diseases and because changes in diet and exercise, which involve lifelong habits, are so difficult for patients. Finally, providers complained that they had received insufficient training in medical school and in their residencies to promote behavioral change. Their training had focused primarily on the treatment of acute conditions, not chronic ones requiring a high degree of patient participation. As one physician noted, most providers can treat conditions that require only medications pretty well, but "not many give good advice for diabetes."

Complexity of treatment. Diabetes treatment is also harder for providers because it is more complex and requires close coordination with patients and specialists. There are more components to diabetes treatment (medications, glucose monitoring, education about diet and exercise, screening for and prevention of complica-

tions) than for other diseases, and diabetes has more complications and comorbidities because the biochemical changes in diabetes affect all organs in the body. The different therapies and numerous specialists required for the complications and comorbidities of diabetes are also difficult for providers to coordinate.

Symptoms. Another reason providers feel diabetes is harder to treat is because its symptoms are an unreliable guide to the severity of the disease for patients and to the efficacy of treatment for providers. Diabetes symptoms are so subtle and last over such a long period of time that patients do not feel in immediate danger and often neglect to follow treatment recommendations. Providers noted that it is easier to modify treatments in conditions with definite symptoms and more gratifying when treatments provide immediate relief, neither of which applies to diabetes. Further, diabetes treatments often cause pain or create symptoms rather than alleviating symptoms, including finger sticks for glucose monitoring, insulin injections, and medications that sometimes result in hypoglycemia. Because of this, providers often have difficulty convincing patients to follow their treatment recommendations, especially if those patients are not experiencing uncomfortable symptoms.

Discrepancy between provider and patient perceptions. Diabetes treatment is also more difficult because although providers feel considerable urgency to control diabetes, their patients do not. Providers' sense of urgency is heightened by several factors. The stakes are high, and they know that the consequences are devastating if patients do not follow their recommendations, especially about lifestyle changes; they are aware that they are treating an underlying condition affecting the entire body, not only symptoms; and they feel their actions are more critical because diabetes is generally diagnosed at an earlier stage than, for example, heart failure, which is diagnosed when the patient is near the end of life.

Provider urgency to control diabetes contrasts sharply with patient experience and awareness, however. The lack of dramatic symptoms to scare patients and the lack of public health campaigns to bring the seriousness of diabetes to patients' attention (such as for hypertension, cholesterol, and smoking), combined with cultural and economic barriers, mean that patients neither take diabetes seriously nor listen to their providers.

Table 3—Why diabetes is harder to treat than other diseases: qualitative themes

Theme	Explanation
1. Medication	Not as effective. May increase symptoms. Aimed at underlying problem versus symptoms. Not as many alternatives.*
2. Glycemic control	Constant fluctuations. Labor intensive. Patients become lax in following recommendations.
3. Lifestyle change	Outside of provider control. Diet and exercise change difficult for patients. Inadequate provider training to motivate behavioral change.
4. Complexity of treatment	Many components to coordinate with patients. Comorbidities and complications require different therapies and specialists.
5. Symptoms	Often asymptomatic. Treatments that alleviate symptoms are easier to titrate and more gratifying to use. Treatments may cause symptoms.
6. Discrepancy between provider and patient perceptions	Patients do not share providers' sense of urgency to control diabetes. Lack of public health campaigns negatively affects patient awareness of diabetes.
7. Unclear diagnosis and treatment protocols	Difficult to know when and how to alter treatment. Too many controversies over how to manage diabetes effectively.
8. Inexorable decline	Patient will get complications no matter what. Provider cannot cure it or control it.
9. Time and expense	Extra time required for diabetes care not supported by clinic administrators. Neither clinics nor patients can afford the cost of comprehensive care. Limited reimbursement for diabetes care and supplies from government programs.

*This study took place before the release of metformin, acarbose, and troglitazone.

Unclear diagnosis and treatment protocols. Providers complained that, even though the complications of high blood sugar are well known, current diagnosis and treatment protocols for diabetes are unclear. It is difficult to know when and how to alter treatment, and a good outcome is not assured. Further, they perceive that there are too many controversies within the academic medical community over how to manage diabetes effectively.

Inexorable decline. Diabetes treatment is especially frustrating because its prognosis is unpredictable. Even if both provider and patient do their best, the patient may still experience complications. Further, unlike other conditions, diabetes can neither be cured through surgery nor effectively controlled with medications, challenging providers' sense of efficacy and self-image.

Diabetes is "impossible to control," complained one provider.

Time and expense. Diabetes is especially hard to treat because clinics and patients frequently lack sufficient resources to cover all aspects of comprehensive diabetes care. Extra provider time and effort are required to treat diabetes, yet clinic administrators, concerned with the bottom line, do not support longer or fewer appointments. The clinics cannot afford sufficient staff to educate patients, or a complete array of medications and supplies (syringes, glucose meters, and strips) in their formularies, or complete coverage for referrals to specialists. Medicare and Medicaid sometimes do not reimburse the full cost of diabetes care and supplies. Patients cannot afford to cover extra costs on their own. For these reasons, providers frequently have to compromise the quality of care they offer.

CONCLUSIONS— Our findings on provider attitudes toward diabetes suggest a number of possible explanations for primary care providers' poor adherence to current standards of care. Barriers include attitudes toward diabetes itself and the complexity of its management, and a perceived lack of support from society and the health care system for their efforts to control diabetes.

Researchers are becoming increasingly aware that attitudes, including those in the affective domain, have considerable impact on quality of care and are thus important to address in medical and CME programs (9,10,20). Qualitative methods complement quantitative methods to gain an in-depth understanding of provider attitudes. For example, in the present study, all providers agreed in their scale responses that the treatment of hyperglycemia is efficacious in preventing diabetes complications and that their therapeutic actions and advice result in improved outcomes. On a deeper level, however, revealed through open-ended interviews, providers actually doubted the efficacy of diabetes treatment (theme 8) and their abilities to carry it out (themes 1, 3, and 7). Such information is vital to plan effective educational programs that, in addition to updating provider knowledge, address emotional dimensions of care.

Provider attitudes found in the present study closely parallel themes in the patient literature on adherence to diabetes treatment regimens. For example, patients follow treatment regimens more readily if they involve medications rather than lifestyle changes (21,22); if the perceived severity of the disease is high (23), including a direct connection between symptoms and disease (24); if medications alleviate uncomfortable symptoms and minimize the risk of hypoglycemia (23,24); if the regimen is simple rather than complex (25); and if they believe the recommended treatment will enable them to delay or avoid complications (24,26). According to our data, these attitudes are not unique to patients. Both providers and patients share frustrations with diabetes, perhaps because of the inability of either party to achieve a sense of control over the disease. It is incumbent on providers, however, to be aware of these attitudes so they can be counteracted, or at least not inadvertently reinforced, during patient encounters.

Themes from provider interviews also reflect a perceived lack of support from soci-

ety and the health care system for their efforts to control diabetes, which may contribute to their generally negative attitudes about diabetes. As Glasgow notes (27), contextual factors in diabetes care must be addressed or practice guidelines are unlikely to be followed. The lack of support perceived by primary care providers in our study may result from the discordance between our system of health care, which was designed for rapid response to acute illness, and the actual needs of the large percent of the adult population with chronic illness (27–29). With chronic illness, the role of the provider and the health care system shifts from providing direct medical care to facilitating management of the disease by patients and families (28,29). Our health care system, including how we train our health professionals, has yet to make this shift.

Part of the shift to accommodate chronic disease more effectively in our health care system can originate from providers and clinics. Glasgow (27) and Von Korff et al. (29) propose ways to enlist patient, clinic, and community support in diabetes management to lighten the load for providers and improve diabetes outcomes. Communication and motivational techniques beneficial to diabetic patients include using patient-focused dialogue to identify barriers to self-care and assess patient readiness, focusing on a specific problem, establishing realistic objectives, negotiating an action plan, and frequent follow-ups. Families could be involved in diabetes education and management, and visits to assess the home context are ideal. Actions at the clinic level include a team approach to diabetes care, reminder systems to prompt screening and referrals, longer appointment times for patients with chronic disease or multiple comorbidities, and a focus on patient education. Ties with community groups such as local American Diabetes Association chapters help to mobilize support for low-fat food choices and labeling, provide support groups and walking groups, and lobby for insurance reimbursement for diabetes education and supplies. Von Korff et al. (29) note that developing a common core of services and skills within the clinic and community to support the collaborative management and prevention of multiple chronic diseases would be an efficient use of time and resources. For example, exercise prolongs life and improves functional status, as well as having specific effects on outcomes in diabetes, cardiovascular disease, and arthritis.

The other impetus for change needs to originate at the level of the health care system itself. Recent progress in support of diabetes has included a growing number of states that require Medicare and Medicaid to reimburse diabetes education and supplies and increased awareness and prevention efforts by the Centers for Disease Control and Prevention and the National Institutes of Health, including the recently initiated National Diabetes Education Program. Much work remains, however, to enable our health care system to effectively address chronic disease and its prevention.

Medical education and CME programs have an important role to play in promoting positive attitudes that encourage the effective and compassionate treatment of diabetes and other chronic diseases (9,10,20). This includes helping health care professionals to make the shift from an acute to a chronic model of medical care and from the role of primary decision-maker to that of teacher and facilitator. Primary care providers, not only specialists, need to be targeted in educational interventions, since they provide the majority of care for patients with type 2 diabetes. CME that addresses attitudes in addition to knowledge is likely to be more effective than traditional CME in changing practice behaviors and improving diabetic outcomes (10). At the very least, it may make the care of diabetic patients more emotionally rewarding.

Generalizability of these regional findings to other providers is likely given the recurrent themes from the literature, the diversity of our provider sample, and the short length of time they had been working in south Texas clinics. However, these findings will need to be confirmed in other geographic locations and practice settings.

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