

BUILDING CULTURAL BRIDGES: UNDERSTANDING ETHNICITY TO IMPROVE ACCEPTANCE OF INSULIN THERAPY IN PATIENTS WITH TYPE 2 DIABETES

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Objectives: Type 2 diabetes is a significant healthcare problem in the Latino/Hispanic community. As with most patients with type 2 diabetes, Latino patients will eventually require insulin therapy to maintain glycemic control. Some cultural barriers to starting insulin therapy among Latino patients have been reported. This review explores the implications of the increasing prevalence of type 2 diabetes in Latino patients, defines cultural values and differences that may affect acceptance of insulin therapy, and reviews available strategies that may facilitate initiation of insulin treatment in this group.

Methods: A literature search was conducted for publications related to Hispanic Americans, Latino persons, type 2 diabetes, and insulin therapy by using PubMed/National Center for Biotechnology Information.

Results: Despite evidence that earlier initiation of insulin therapy improves outcomes in patients with type 2 diabetes, Latino patients appear to be more resistant to insulin therapy than non-Hispanic Whites. Physician challenges associated with addressing the negative perceptions about insulin therapy are further compounded by cultural and language barriers often encountered when treating Latino patients. Scarce information regarding specific insulin regimens in Latino patients is available.

Conclusions: Increased cultural awareness and competence among healthcare providers and increased use of Spanish-speaking diabetes educators seem to improve diabetes outcomes among Latino patients. Also, implementation of simpler insulin regimens may increase acceptance of insulin therapy and improve clinical outcomes in Latino patients. A relatively simple titration regimen using once-daily bedtime basal insulin glargine has demonstrated efficacy for improving glycemic control in many patients with type 2 diabetes and is a strategy that may also be useful for Latinos as an introduction to insulin therapy and as the foundation of a more comprehensive insulin regimen in the future. (*Ethn Dis.* 2006;16:559-568)

Key Words: Culture, Hispanic, Insulin, Latino, Type 2 Diabetes

INTRODUCTION

Diabetes affects an estimated 20.8 million individuals in the United States and is especially prevalent in the Latino community.¹⁻⁵ Overall, 2 million Latino persons age ≥ 20 years have diagnosed diabetes (8.2% of Latino persons in this age group).¹ A considerable number of people have undiagnosed diabetes in this group. As in the general population, 90%-95% of all cases of diabetes found in Latino patients are type 2 diabetes. In the United States, $\approx 24\%$ of Mexican Americans and 26% of Puerto Ricans between the ages of 45 and 74 have diabetes. Overall, Latinos are 1.5 to 2 times more likely to develop diabetes than are non-Hispanic Whites who are the same age.¹ Indeed, regardless of education level, body mass index (BMI), participation in physical activity, or health insurance coverage, the prevalence of diabetes is consistently higher among Hispanics compared to non-Hispanic Whites (Table 1).⁵ Although diabetes has been extensively studied in Puerto Rican, Mexican American, and Cuban American populations, many other Latino/Hispanic subgroups have not been studied as thoroughly. We do not know whether all the information

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gathered from the more extensively studied Latino subpopulations can be extrapolated to other subgroups.

Causes for the increase in risk for diabetes observed in the Latino population are not entirely understood, although some genetic and lifestyle factors seem to be involved. Both of these factors contribute to increased insulin resistance and/or impaired insulin secretion, the two main pathophysiologic defects in type 2 diabetes. A recent study in 57 healthy children found that Hispanic American and African American children are more insulin resistant than non-Hispanic White children, even after adjustment for differences in body fat.⁶ Insulin resistance and obesity are closely linked to the development of type 2 diabetes and cardiovascular disease.^{7,8} The associated compensatory responses to increased insulin resistance differed across these ethnic groups, suggesting that the underlying pathology of diabetes may indeed vary in high-risk ethnic subpopulations.⁶ Therefore, genetic factors may contribute to the development of insulin resistance in the Latino population.

In addition, according to various population-based studies, lifestyle factors are also important contributors to

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Table 1. Prevalence of self-reported diabetes among Hispanics and non-Hispanic Whites aged >18 years, by selected characteristics—Behavioral Risk Factor Surveillance System, selected areas,* 1998–2002

Characteristic	Prevalence of diabetes			
	White, non-Hispanic†		Hispanic	
	%	(95% CI)§	%	(95% CI)
Sex¶				
Men	5.5	(5.3–5.7)	9.7	(8.7–10.7)
Women	4.5	(4.3–4.7)	9.9	(9.1–10.7)
Education level**				
Less than high school	7.4	(6.6–8.2)	11.8	(10.8–12.8)
High school	5.4	(5.0–5.8)	8.6	(7.4–9.8)
Some college	5.4	(5.0–5.8)	9.1	(7.7–10.5)
College graduate or more	3.7	(3.5–3.9)	7.0	(5.8–8.2)
BMI***††				
<25.0	2.7	(2.5–2.9)	7.0	(6.0–8.0)
25.0–29.9	4.5	(4.3–4.7)	8.9	(8.1–9.7)
≥30.0	11.2	(10.6–11.8)	15.3	(13.7–16.9)
Participated in physical activity during the preceding month**				
Yes	4.4	(4.2–4.6)	9.1	(8.3–9.9)
No	7.1	(6.7–7.5)	10.8	(9.6–12.0)
Health insurance coverage**				
Yes	5.0	(4.8–5.2)	10.0	(9.4–10.6)
No	5.3	(4.5–6.1)	10.1	(7.7–12.5)
Total¶	5.0	(4.8–5.2)	9.8	(9.2–10.4)

* California, Florida, Illinois, New York/New Jersey, Texas, and Puerto Rico.

† Non-Hispanic Whites in Puerto Rico were not included because of small sample size.

§ Confidence interval.

¶ Age adjusted to the 2000 U.S. standard population.

** Age and sex adjusted to the 2000 U.S. standard population.

†† Body mass index (kg/m²) from self-reported weight and height.

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the risk of type 2 diabetes in this group. National surveys and other studies including a large proportion of Latino persons, such as the San Antonio Heart Study, indicate that decreased physical activity, in particular, is linked to an increased risk of developing type 2 diabetes.^{9,10} Results from the Third National Health and Nutrition Examination Survey (NHANES III) found that 65% of Mexican American men and 74% of Mexican American women participated in little or no leisure-time activities that contributed to physical exercise.¹¹

Some, but not all, studies suggest that Latino persons with type 2 diabetes appear to be more likely to develop microvascular complications than are non-Hispanic Whites with type 2 diabetes.¹² An examination of data from

NHANES III found that the prevalence of retinopathy was 84% higher (33.4%) in Mexican Americans with diabetes, compared with non-Hispanic Whites (18.2%).¹² In addition, Mexican Americans were more likely to have proliferative (higher severity) diabetic retinopathy (5.6%) than non-Hispanic Whites (0.9%). The risk for development of diabetic retinopathy in Mexican Americans remained twice that of non-Hispanic Whites even after adjustment for known risk factors, including the duration of diabetes, glycosylated hemoglobin (A1C) level, and treatment with insulin and oral agents. Moreover, Latino patients are 4.5–6.6 times more likely to have end-stage renal disease.¹³ The incidence of sensory neuropathy and peripheral vascular disease, however, is similar for Latino persons with

diabetes and non-Hispanic Whites.^{13,14} Furthermore, although some studies have suggested a lower prevalence of cardiovascular disease in the Latino population in comparison with the White population, these findings have not been fully demonstrated, and no evidence has been seen of any consistent protective mechanism for heart disease in the Latino population.¹⁵

The increased prevalence of several complications in Latino patients may be due to worse glycemic control than in Whites, as found in the NHANES III study, reduced access to health care, and delayed interventions. Poorly understood biological factors also may be a factor. The increased risk for diabetes coupled with the increased likelihood of developing long-term complications in the Latino community represents a “double jeopardy” that requires special consideration in the clinical setting.

NEW APPROACHES TO THE MANAGEMENT OF TYPE 2 DIABETES

Once lifestyle modification alone has failed, patients with newly diagnosed type 2 diabetes are generally treated initially with up to two oral antidiabetic agents.¹⁶ The most commonly used oral antidiabetic combination therapies include metformin plus a sulfonylurea.¹⁶ For patients who fail to achieve adequate glycemic control while receiving combination therapy with two oral antidiabetics, usually either a third oral agent is added or insulin therapy is initiated.^{16,17} Over time, treatment with oral antidiabetics alone often becomes ineffective and most patients eventually require insulin therapy.¹⁸ In the UK Prospective Diabetes Study, 53% of newly diagnosed patients with type 2 diabetes allocated to treatment with sulfonylurea were found to require insulin therapy to maintain glycemic control during the six years following diagnosis.¹⁸

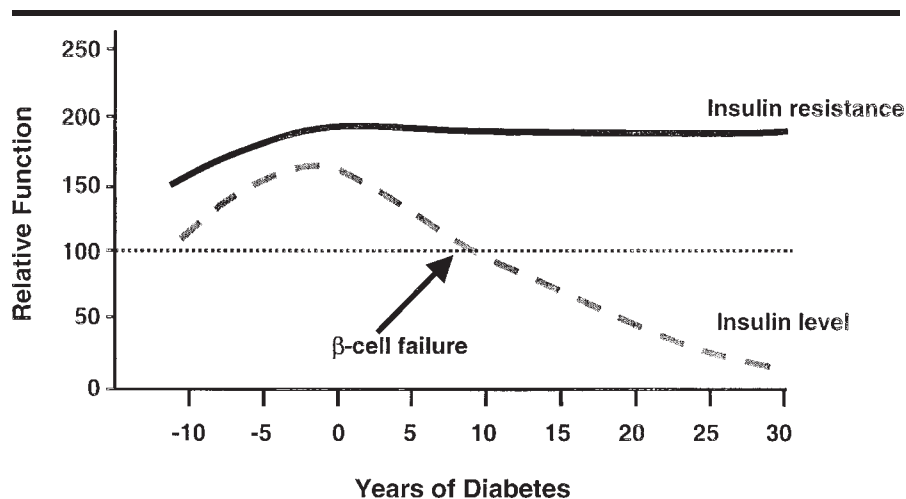


Fig 1. Natural history of diabetes¹⁹ Reprinted from Richard M. Bergenstal, et al. Chapter 58, management of type 2 diabetes: a systematic approach to meeting the standards of care. 2001:821–835. *Endocrinology*. 4th ed. Edited by DeGroot and Jameson with permission from Elsevier

The requirement for insulin over time is largely due to the progressive nature of diabetes. Type 2 diabetes is characterized by the dual defect of insulin resistance and insufficient insulin secretion by pancreatic beta-cells.¹⁹ While insulin resistance generally remains constant throughout the course of the disease, beta-cell function progressively deteriorates (Figure 1).¹⁹ Over time, some degree of absolute insulin deficiency develops, resulting in a state of chronic hyperglycemia.¹⁹ When endogenous insulin is no longer produced in sufficient quantities, insulin must be administered therapeutically to establish or maintain glycemic control.¹⁹

In most patients with type 2 diabetes, insulin is introduced once oral agents and lifestyle modification have failed to control hyperglycemia. Although this approach is not unreasonable, the introduction of insulin in the treatment of type 2 diabetes is frequently delayed in many patients. In recent years, studies have suggested that early intensive insulin therapy may have some benefits beyond glycemic control. It has been proposed that earlier addition of insulin may reverse some of the detrimental effects of glucose toxicity, including loss of beta-cell function, that characterize

the progressive nature of diabetes, thereby improving glycemic control. Ryan et al²⁰ demonstrated that in newly diagnosed patients with type 2 diabetes, a two- to three-week course of intensive insulin therapy was followed by improvement of beta-cell function and good glycemic control over a 1-year period. The authors propose that this short-course, intensive insulin treatment may create a foundation for patients to later succeed in controlling glucose levels.²⁰ Whether these effects are exclusively the result of reduced glucotoxicity or a direct effect of insulin on beta-cell function is not known; however, this strategy seems to be appropriate for some patients with type 2 diabetes.

The effect of intensive insulin therapy on long-term outcomes in patients with type 1 diabetes was evaluated during a seven-year observational followup of the Diabetes Control and Complications Trial (DCCT) conducted by the Epidemiology of Diabetic Interventions and Complications (EDIC) research group.²¹ The DCCT had previously demonstrated that intensive insulin therapy (three to four daily injections or continuous subcutaneous infusion) reduced the risk of retinopathy, nephropathy, and neuropathy by

35%–90%, compared with conventional insulin therapy (one to two daily injections of insulin). Although patients who received intensive insulin therapy continued to have significantly lower A1C levels than those who had received conventional insulin therapy at one year into the EDIC follow-up study, differences in A1C levels between the two former treatment groups converged over time and became statistically nonsignificant after five years of follow-up.²¹ Despite the lack of difference in A1C levels over time, the benefits of early glycemic control continued to persist throughout the seven years of follow-up in the EDIC study.²¹ Patients who had been treated with intensive insulin therapy had significantly reduced risk for progression of retinopathy and nephropathy, compared with those who had been treated with conventional insulin therapy.²¹ Whether early, intensive insulin therapy in patients with type 2 diabetes would lead to results similar to those observed in people with type 1 diabetes is not known; however, it is intuitive to suggest that early control of hyperglycemia in any patient may be beneficial to reduce long-term complications.

Information is also available regarding the effects of intensive insulin therapy on macrovascular disease. Progression of carotid intima-media thickness, a well-established index of atherosclerosis, was shown to be significantly less in patients with type 1 diabetes who formerly had been treated with intensive insulin therapy than in patients who formerly had been treated with conventional insulin therapy.²² In addition, patients with type 1 diabetes who formerly had received intensive insulin therapy had significantly reduced coronary calcification, another marker of atherosclerosis, compared with those who formerly had received conventional insulin therapy.²³ Persisting benefits of early glycemic control also were demonstrated in a trial conducted by the Diabetes Mellitus Insulin Glucose In-

fusion Acute Myocardial Infarction (DIGAMI) study group.^{24,25} This study directly assessed the effects of intensive glycemic control with insulin therapy in patients with type 2 diabetes and acute myocardial infarction (AMI). Patients treated with three months of intensive insulin therapy had a reduction in the 1-year mortality rate of $\approx 30\%$ compared with conventionally treated patients who had AMI, with positive effects on mortality persisting for three to four years.^{24,25} These findings indicate that early, aggressive glycemic control results in improved outcomes with respect to morbidity and mortality in patients with diabetes after AMI.

BARRIERS TO INSULIN THERAPY

Although strong evidence shows that early initiation of insulin therapy provides important benefits in patients with diabetes, many healthcare providers and patients continue to be reluctant to begin therapy.²⁶ Patients often are concerned about the hassles and discomfort presumed to be associated with taking injections and may express feelings of uncertainty as to whether they will be able to correctly administer the injections.²⁶ Both providers and patients also may be concerned that insulin therapy will result in undesirable side effects, particularly hypoglycemia and weight gain.²⁶ Some patients believe that insulin itself may cause serious complications, such as amputations or blindness.^{26,27} Patients also commonly fear that being prescribed insulin indicates that the disease has advanced to a serious stage or that they have failed to adequately care for themselves, which in turn can foster feelings of hopelessness, whereas not having been prescribed insulin signifies that they are still in relatively good health.²⁶

Many of these negative perceptions about insulin are especially prevalent among Latino patients with diabetes.²⁸

A recent survey of 165 patients with type 2 diabetes found that Latino patients are more likely than non-Hispanic White patients to believe that insulin therapy may cause long-term complications (72% vs 8%, $P < .001$) and that injections are painful (61% vs 30%, $P < .02$).²⁸ Approximately half of all patients surveyed were concerned that they could not master the demands of insulin therapy and that initiating insulin would restrict their lives.²⁸ Many patients also felt that the introduction of insulin indicated personal failure at managing their disease and that insulin treatment would predispose them to serious effects of hypoglycemia.²⁸ Our own experience in the Latino Diabetes Initiative at the Joslin Diabetes Center, Boston, Massachusetts, confirms the concept that multiple socioeconomic, educational, and cultural barriers exist among patients with diabetes that should be considered before integrating a diabetes clinical and educational program for Latino patients.²⁷ For instance, 91% of Latino patients who are seen for the first time in our program were not familiar with the term "hemoglobin A1C" and were not aware of the importance of tight glycemic control. Moreover, 43% thought that insulin causes blindness. Because 90% of the patients included in this survey had health insurance coverage and a higher than average educational level in comparison to the general population, such barriers to insulin therapy would be expected to be more pronounced in other Latino subgroups.²⁷

Cultural Barriers to Diabetes Treatment and Insulin Use in Latino Communities

The Latino community is rich in fascinating values, traditions, beliefs, and myths. Many aspects of Latino culture influence patient care in the clinical setting (Table 2).²⁹⁻³¹ A lack of cultural competence may result in barriers with respect to the communi-

cation of pertinent information about diabetes care and insulin therapy by physicians to their patients and potentially compromise clinical outcomes.

Not all Latino patients will have exactly the same approach to their health. Creating a stereotype about all Latino patients is as dangerous as not recognizing the cultural differences that may affect diabetes care in this group. Whereas cultural values cannot be generalized and expected to be present in all individuals in this community in the same way, predominant features have been described in the literature.^{29,30,32,33} We will briefly examine the most representative.

Familismo is a cultural value in the Latino community defined as a collective loyalty to the extended family or group that supersedes the needs of the individual.^{29,32} Family members are valued as reliable providers of help and support, and decisions may be made only after referring to family members for their input.^{29,34} Latino patients often wish to consult with their extended families about their medical conditions and recommended changes in therapy before making decisions,^{29,34} which may result in delay or deferral of treatment decisions.²⁹ Lack of physician recognition of this cultural value among Latino patients may result in unnecessary patient-physician conflicts, patient dissatisfaction with care, nonadherence to diabetes therapy, delays in the initiation of insulin therapy, and poor continuity of care.²⁹

Another prevalent cultural value in the Latino community is *personalismo*, translated as "formal friendliness," in which patients expect to develop a warm and personal relationship with their physicians.^{29,32} This type of patient-physician relationship would be characterized by interactions that occur at close distances and is one that emphasizes physical contact, such as handshakes, a hand on the shoulder, and even hugging under certain circumstances.²⁹ Latino patients with diabetes who per-

Table 2. Recommendations for overcoming cultural and language barriers that contribute to reluctance toward insulin in the Latino/Hispanic American community²⁹

Barriers	Potential adverse consequences	Solutions
Cultural values		
<i>Familismo</i>	<ul style="list-style-type: none"> • Patient-physician conflicts • Patient dissatisfaction with care • Nonadherence to diabetes therapy • Delays in the initiation of insulin therapy • Poor continuity of care 	<ul style="list-style-type: none"> • Encourage patients to invite family members to patient visits • Allow family members to ask questions and participate in the decision-making process regarding starting insulin • Provide patient with ample time to discuss starting insulin with extended family
<i>Personalismo</i>	<ul style="list-style-type: none"> • Patient reluctance to share details regarding diabetic status • Nonadherence to diabetes therapy • Patient reluctance to consider starting insulin • Patient dissatisfaction with care 	<ul style="list-style-type: none"> • Adopt a more personalized approach with Hispanic American patients • Decrease physical distance during interactions with patients • Increase socially appropriate physical contact with Hispanic American patients • Convey a more friendly attitude with Hispanic American patients
<i>Simpatia</i>	<ul style="list-style-type: none"> • Communication problems • Patient reluctance to share details regarding diabetic status • Nonadherence to diabetes therapy 	<ul style="list-style-type: none"> • Emphasize courtesy, a positive attitude, and social amenities
<i>Respeto</i>	<ul style="list-style-type: none"> • Communication problems • Patient reluctance to share details regarding diabetic status 	<ul style="list-style-type: none"> • Use appropriate titles and formal greetings with patients • Involve patients in the decision-making process regarding insulin therapy • Devote special attention to eliciting patient concerns about insulin
<i>Fatalismo</i>	<ul style="list-style-type: none"> • Avoidance of effective diabetes treatment 	<ul style="list-style-type: none"> • Emphasize the efficacy of insulin as a diabetes therapy
Language	<ul style="list-style-type: none"> • Limited exchange of information about diabetes treatments • Patient has no control of the dialogue • Patient cannot ask questions about insulin • Physician cannot respond to patient concerns and fears about insulin • Patient cannot understand complicated regimens and techniques for self-administering injections 	<ul style="list-style-type: none"> • Use Spanish-speaking staff and diabetes educators whenever possible • Utilize resources by the ADA and AADE for information on bilingual diabetes programs, educational materials, and educators

ADA=American Diabetes Association; AADE=American Association for Diabetes Educators.

ceive that *personalismo* is lacking in the patient-physician relationship may believe their physician does not care about them.²⁹ As a result, these patients may be reluctant to share important details regarding their diabetic status and become noncompliant with diabetes medications, reluctant to even consider starting insulin, and dissatisfied with the care they are receiving.²⁹

Other cultural values that may affect diabetes care in the Latino community include *simpatia*, *respeto*, and *fatalismo*.²⁹ *Simpatia* refers to the value of politeness and pleasantness in the face of stress.²⁹ Latino patients expect that their physi-

cians will be polite and pleasant, and the relatively neutral attitude of many American physicians may be viewed as negative. *Respeto* means "respect" in Spanish, and Latino patients may become resentful and distant when they perceive they are not respected by their physicians.²⁹ *Fatalismo* is the cultural belief that the individual cannot alter his/her fate, which may lead to the avoidance of effective treatment plans by patients with diabetes.²⁹ Effective communication with and management of the Latino patient with diabetes requires that physicians recognize and respond appropriately to these cultural values.

Language Barriers

The most common and potentially most problematic barrier that physicians may encounter when treating Latino patients who have diabetes relates to an inability to communicate in the same language.^{29-31,34-36} The existence of a language barrier between physicians and patients has the potential to compromise the quality of health care delivered, as well as clinical outcomes achieved.^{29,37} Verbal communication is an essential component of patient-physician interaction, and any lack thereof may limit the exchange of information about diabetes treatments,

patient control of the dialogue, patient ability to ask important questions about insulin, and the overall rapport between the patient and physician.³⁸ These verbal communication processes all have been shown to affect clinical outcomes and may be a serious barrier to effective patient care for the nearly half of all US Latino patients who have difficulty speaking English.³⁷ A recent study conducted in a public hospital outpatient department found that Spanish-speaking diabetes patients are more likely to report a better interpersonal process of care when their primary care physician has a higher self-rated language ability and cultural competence.³⁶

Patients also tend to prefer physicians who have a similar ethnic background, as evidenced by improvements seen in patient compliance and followup when such ethnic similarities exist.³⁹ However, a pronounced discrepancy currently exists between the number of Latino physicians and the number of Latino patients.³⁹ In 1999, Latino physicians accounted for $\approx 3.3\%$ of practicing physicians in the United States, a number that is disproportionate compared with the percentage of the patient population that is of Latino origin (13.9% of the US general population).^{40,41} Although the use of on-site interpreters and remote-access interpreters, who translate from a distant location via headphones, has been shown to improve the quality of communication between physicians and non-English-speaking patients, these services are costly and often may not be easily implemented in clinical settings.³⁷

Language barriers cannot simply be overcome by the translation of written materials for the patient deemed appropriate to begin insulin therapy. Many Latino patients are resistant to insulin, and they may have questions for their physician and concerns that must be addressed before they will accept this therapy.²⁸ In addition, $\approx 50\%$ of the Latino community is functionally or

marginally illiterate, and most Latino persons who cannot read English also cannot read Spanish.⁴² Thus, even those patients who would like to start insulin may not be able to read written instructions or may have difficulty understanding complicated injection regimens and techniques for self-administering injections. Diabetes education is an important tool for addressing these issues but may not be easily implemented with Latino patients if Spanish-speaking diabetes educators are not available.

OVERCOMING RELUCTANCE TOWARD INSULIN THERAPY: THE NEED FOR CULTURAL COMPETENCE

Many of the cultural values that contribute to patient reluctance toward insulin therapy may be overcome through increased cultural competence. The goal for the clinician is to provide culturally competent health care, in which they recognize and respond appropriately to key cultural features that affect clinical care.^{29,30,36} Cultural competence refers to the knowledge and interpersonal skills that allow providers to understand, appreciate, and work with individuals from cultures other than their own. It involves an awareness and acceptance of cultural differences, self-awareness, and adaptation of skills. When the cultural values important to Latino patients with diabetes are responded to appropriately, potential conflicts may be avoided. Moreover, many of these values may be used by the physician to facilitate the decision-making process regarding initiation of insulin therapy. In other words, the perceived cultural barriers can be transformed into opportunities for a more appropriate treatment regimen.

Indeed, recent clinical studies support the need for cultural competence in the treatment of Latino patients with type 2 diabetes.^{34,35} In a prospective, randomized study on the Texas-Mexico

border of patients with type 2 diabetes between 35 and 70 years of age, the Starr County Border Health Initiative, Brown and colleagues demonstrated the effectiveness of culturally competent diabetes self-management education with respect to improving health outcomes in Mexican American patients.³⁴ Study intervention involved three months of weekly instructional sessions on nutrition, self-monitoring of blood glucose, exercise, and other self-care topics and six months of biweekly support group sessions to promote behavior changes.³⁴ The approach was culturally competent in terms of language, diet, social emphasis, family participation, and incorporation of cultural health beliefs. Notably, at six months, the mean A1C of the experimental subjects was 1.4% less than the mean of the one-year wait-listed control group. Similarly, a more recent study, Project Dulce, found that a culturally appropriate, community-based, nurse case management/peer education diabetes care model can lead to significant improvement in clinical diabetes care, self-awareness, and understanding of diabetes in underinsured, mostly Latino patients.³⁵ The control group in this study consisted of patients referred to but not enrolled in Project Dulce. After one year in this study, the patients in the case management and peer education group exhibited significant improvement compared to the control group in mean A1C from 12.0% at the start of the study to 8.0%. Improvements in total cholesterol, LDL cholesterol, and blood pressure were also noted.³⁵ Although these studies went beyond the practicing physician and involved the coordinated efforts of nurses, dietitians, and community workers, they demonstrate that practice models focused on providing culturally competent diabetes care can improve health outcomes in Latino patients.

Physicians may demonstrate respect for *familismo* by encouraging Latino patients to invite family members to

patient visits. Doing so not only addresses the patient's need to share medical information about diabetic status with family members but also may be helpful in facilitating communication with non-English-speaking Latino patients if a family member is English-speaking. Family members should be encouraged to ask questions and participate in discussions about starting insulin. In addition, physicians should understand that the patient needs ample time to discuss this decision with the larger, extended family.²⁹

Physicians who understand and respond to *personalismo* may establish a trusting patient-physician relationship with Latino patients. A more personalized approach may be appropriate to take with Latino patients by "decreasing physical distance during interactions with patients, increasing socially appropriate physical contact, providing a business card or possibly even a beeper number, and showing interest in a patient's personal life at each visit."²⁹ While physicians always should assume a formal and professional demeanor with their patients, conveying a more friendly attitude may be beneficial with Latino patients by "beginning routine medical visits with brief conversations about a patient's family, work, or school."²⁹ Latino patients may be more likely to discuss their concerns about insulin openly and more willing to consider starting insulin therapy in an environment in which they trust their physicians. Other cultural values prevalent in the Latino community may be addressed by maintaining a courteous and respectful attitude toward patients, making an effort to actively involve them in the decision-making process to start insulin, and communicating to them that their conditions can be improved with treatment. Patients' concerns and ideas about what starting insulin therapy means to them should be openly addressed. The healthcare provider needs to discuss with patients and family members common myths

that insulin causes blindness and other chronic complications. Equally important is the need to discuss the concept that insulin therapy should be seen as a replacement of a hormone that is not adequately produced in the pancreas because of a progressive and inexorable decline in beta-cell function and that initiating insulin is not a punishment to the patient for not following usual treatment recommendations.

Finally, language barriers are best addressed through the use of Spanish-speaking staff, whenever possible. In an effort to improve resources for physicians who treat Hispanic patients with diabetes, the National Hispanic/Latino Expert Consultant Group (NH/LECG) has recommended the development of community-based programs for the training of lay Hispanic/Latino diabetes educators with minimum certification standards.⁴³ The NH/LECG also has supported diabetes educator training programs targeting bilingual and bicultural health professionals. In an effort to maximize the use of currently available resources, the group also has recommended that the American Diabetes Association and American Association for Diabetes Educators create a list of bilingual diabetes programs, educational materials, and bilingual educators for the Latino community.⁴³

INSULIN TYPES AND REGIMENS

Once the barriers to initiating insulin have been overcome and the physician and patient have agreed to start insulin therapy, consideration must be given to the type of insulin regimen appropriate for a particular patient. Several common approaches to starting insulin exist, including providing basal insulin at bedtime, providing basal insulin at bedtime along with an oral agent during the day, starting a split-mixed insulin regimen, or a multiple-dose insulin regimen.¹⁹ Although all of these insulin

regimens are effective, each has features that may make some methods more appropriate for Latino patients who may have previously discussed the special concerns and considerations with their physicians.

Some of the aspects that need to be taken into consideration before selecting an insulin regimen for a patient include the following: A1C level before therapy, A1C goal, desired decrease in A1C, number of injections per day that the patient is willing to follow, complexity of the insulin regimen, cost, as well as the patient's education level, dexterity, confidence in injecting his/her insulin, visual impairment, and lifestyle.

Most people with type 2 diabetes are started on insulin once oral medications have failed to maintain glycemic control. Even though this approach is acceptable, there is usually a delay in starting insulin treatment once the failure of oral agents is evident. Current theory suggests starting insulin as soon as it becomes evident that A1C goals cannot be met by adding more oral medications and any realistic lifestyle modifications. In fact, the decision to start insulin should be based on the A1C level not reaching goal (<7.0%) despite the usual strategies. This transition to insulin should occur even within the first year of initiation of oral agents if the A1C goal has not been achieved.

A current approach to transition patients to full insulin therapy, while achieving the target A1C level in many of them, is the use of a single, bedtime dose of a long-acting insulin in combination with continued oral therapy. Available long-acting insulins include neutral protamine Hagedorn (NPH), Lente, Ultralente, and insulin glargine. Insulin glargine provides the particular benefit of a relatively uniform level of insulin delivery over a 24-hour period with a once-daily dose.⁴⁴ Because of its more consistent and prolonged drug delivery, therapy with insulin glargine results in less intrasubject variability in insulin levels and produces less hypo-

glycemia compared with other available basal insulin therapies.^{45,46}

The approach of adding bedtime insulin to therapy with oral agents was recently evaluated in a study that compared the effects of bedtime insulin glargine with NPH insulin when added to ongoing oral antidiabetic therapy in 756 overweight patients who had type 2 diabetes and inadequate glycemic control (A1C >7.5%).⁴⁶ A simple algorithm for weekly insulin dosage titration that targeted fasting plasma glucose levels to ≤ 100 mg/dL was used.⁴⁶ Patients were started with 10 IU bedtime basal insulin followed by weekly adjustments based on self-monitored fasting plasma glucose (FPG) values. For example, the corresponding insulin dose increase for patients with an FPG 100–120 mg/dL was 2 IU/d (see reference 46 for specific dose-increase guidelines). Patients treated with insulin glargine or NPH insulin achieved similar improvements in glycemic control after 24 weeks of therapy, and mean A1C values were reduced to 6.96% and 6.97%, respectively. Most patients in both treatment groups, $\approx 60\%$ of patients, achieved A1C levels $\leq 7.0\%$. However, nearly 25% more patients treated with insulin glargine achieved this goal without an episode of documented nocturnal hypoglycemia, compared with patients who received NPH (33.2% vs 26.7%, $P < .05$). Similarly, the FPG titration target of ≤ 100 mg/dL was achieved without an event of nocturnal hypoglycemia by significantly more patients treated with insulin glargine than patients treated with NPH (22.1% vs 15.9%, $P < .03$). Overall, fewer hypoglycemic events occurred with insulin glargine than with NPH throughout the course of the study. Although these findings support the efficacy of either once-daily insulin glargine or NPH with oral antidiabetic agents when used in a relatively simple titration regimen, less hypoglycemia may be expected with insulin glargine. This simplified approach may be useful

Many of the cultural barriers to starting insulin can be overcome when physicians recognize and respond appropriately to the unique set of values intrinsic to the Latino community.

to transition Latino patients into insulin therapy by starting with only one insulin injection a day to allow the patient to become familiar with insulin injections and overcome common fears, eg, hypoglycemia and weight gain, among others. The clinician should keep in mind that this approach reduced A1C levels to $< 7.0\%$ in $\approx 60\%$ of patients who had a starting mean A1C of 8.6% in the treat-to-target study.⁴⁶ Furthermore, as diabetes progresses over time, oral antidiabetics often become ineffective and a complete insulin regimen generally is required.¹⁹

The ideal insulin regimen would mimic normal insulin secretion by the beta-cells of the pancreas, characterized by basal insulin secretion with surges of insulin secretion at mealtimes.¹⁹ Physiologic insulin regimens consist of basal insulin therapy along with mealtime insulin to cover prandial glucose excursions.¹⁹ These regimens generally will be more successful for achieving glycemic control in diabetes patients than monotherapy of either component of insulin alone. However, when choosing insulin therapy, the ease of regimen use also must be taken into consideration; treatment satisfaction tends to be better with simpler regimens.

Split-mixed insulin regimens consist of a twice-daily mixture of regular and NPH insulin.¹⁹ These regimens sometimes are favored because they are

relatively simple to administer and attempt to mimic insulin peaks at mealtimes¹⁹; however, these regimens do not provide full coverage for alterations in blood glucose levels at mealtimes. In addition, this kind of therapy may be more likely to result in hypoglycemia and is associated with a degree of inflexibility in lifestyle. Multiple-dose insulin regimens, in which three or four injections of short-acting insulin are administered daily, are highly effective, but they often do not appeal to patients starting insulin because they are complex and require multiple injections.¹⁹

Insulin regimens need to be individualized by taking into consideration multiple factors, including the provider's familiarity with insulin therapy; patients' characteristics, myths, fears, dexterity, visual acuity, starting A1C level, time of meals, and lifestyle; treatment goals; as well as the complexity of the regimen, number of injections per day, and cost.

CONCLUSIONS

Type 2 diabetes in the US Latino population has become a veritable epidemic, with rates in certain Latino subgroups as high as twice that of non-Hispanic Whites. Many Latino persons with diabetes in this country have poorly controlled diabetes. Early insulin use is a recognized strategy to improve glycemic control in patients with type 2 diabetes but, unfortunately, is often delayed by many practicing providers. In addition, many patients do not wish to start insulin therapy for a number of reasons, which creates barriers to the introduction of insulin as part of a treatment regimen. The reluctance of many Latino patients to start insulin therapy is further amplified in the Latino community at large, where additional cultural and language barriers often exist. Latinos appear to be underserved with respect to the treatment of diabetes both as a result of their own

negative perceptions regarding diabetes treatments and the lack of culturally oriented clinical programs and general cultural understanding among many healthcare professionals in our country. Many of the cultural barriers to starting insulin can be overcome when physicians recognize and respond appropriately to the unique set of values intrinsic to the Latino community. Educational programs for healthcare workers are needed to increase cultural awareness, as are increased numbers of Spanish-speaking diabetes educators to help overcome language barriers. A relatively simple insulin titration regimen, using once-daily basal insulin glargine, may be particularly useful for Latinos as an introduction to insulin therapy and as a foundation for further adjustment and implementation of a more comprehensive insulin regimen. By implementing proper insulin therapy, better glycemic control may be achieved and long-term clinical outcomes can be improved in Latino patients with type 2 diabetes.

ACKNOWLEDGMENTS

This manuscript was supported by a restricted educational grant from Aventis Pharmaceuticals Inc. No ethical approval is needed and there is no specific funding for a study as this is a review article. The author has been a member of the advisory board and/or consultant for the following companies: Aventis Pharmaceuticals Inc., Eli Lilly and Company, Novo-Nordisk Inc., Takeda Pharmaceuticals North America, Inc., GlaxoSmithKline, and Amylin Pharmaceuticals, Inc.

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Manuscript draft: Caballero

Supervision: Caballero