

Annual Report 2005



LATINO DIABETES INITIATIVE

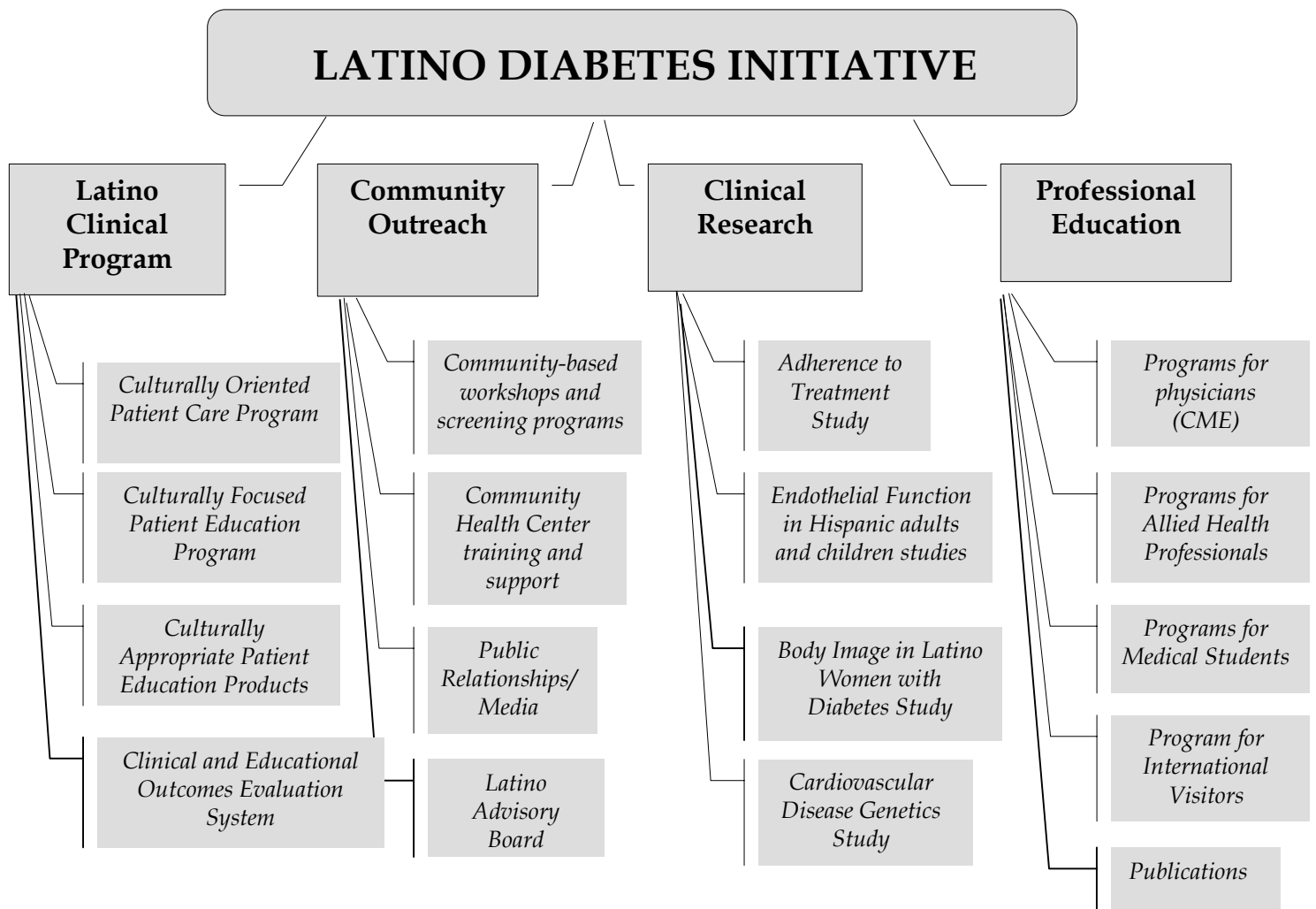
*Working to **improve the lives of Latinos** with diabetes and at-risk for the disease by providing culturally competent patient care and education, community outreach, clinical research programs and professional education.*

Contents:

Background3
Latinos & Diabetes: A Health Crisis.....5
Our Goals8
The Latino Clinical Program9
Community Outreach.....16
Research.....22
Professional Education.....25
Publications.....27
Exhibits28

BACKGROUND:

In response to the growing impact of diabetes on Latinos, Joslin Diabetes Center launched its Latino Diabetes Initiative in July 2002. The program integrates the institution's outstanding brand of diabetes patient care and education with a multi-disciplinary approach to this complex and devastating problem. We have combined patient care and education, community outreach, clinical research and professional education to form an innovative, one-of-a-kind program that truly seeks to improve the lives of Latinos with diabetes or at -risk for the disease.



Fast Facts

Since 2002, we have had 2,913 separate clinic visits to the Latino Program, representing an increase of 260 percent in the number of clinical and education encounters since its inception.

Rosa's Story, an Audio-Novella For Latinos With Diabetes is a culturally oriented patient education tool that will be released soon.

We have consolidated our multidisciplinary teams for Latinos with diabetes and those at risk for the disease.

Through our community outreach programs, we have reached hundreds of Latinos living in the Boston area.

Our research studies have allowed us to better understand the characteristics, needs and challenges of our population

3,500 Health Professionals have attended nation-wide Joslin Continuing Medical Education programs on Diabetes in the Latino population.

Our visitors' program has hosted several health care professionals from different countries, including Spain, Venezuela, Brazil and Mexico.

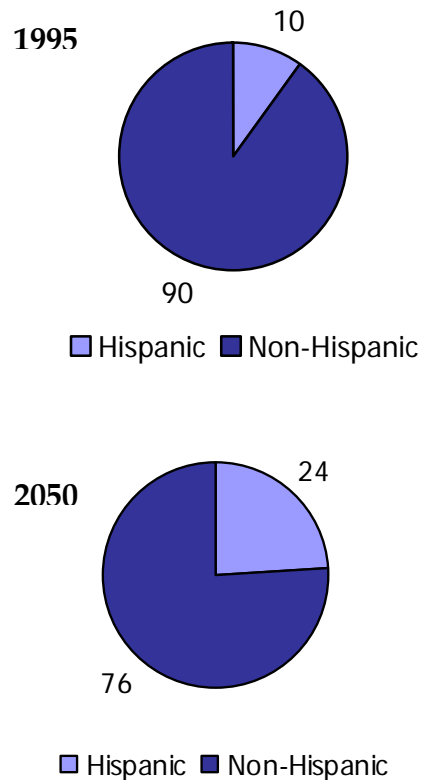
Latinos and Diabetes: A Health Crisis

According to the July 2003 U.S. census, there are approximately 39.9 million Latinos in the country, representing 13.7 percent of the total population. For the first time, Latinos represent the largest minority group in the country. The Latino population increased by 57.9 percent between 1990 and 2000 compared with an increase of 13.2 percent for the total U.S. population and represents the fastest growing racial/ethnic group in the country. It is estimated that by the year 2050, Latinos will number 102.6 million and constitute 24 percent of the U.S. population (Fig 1). The largest Latino groups in the country are Mexican Americans (66 percent), Central/South Americans (15 percent), Puerto Ricans (9 percent), and Cuban Americans (4 percent). The majority of Latinos live in the South Central and Southwestern United States but their number is rapidly growing in many of the Northern and Northeastern states. The mean age in Latinos is 36.7 years, whereas it is 43.8 years in Whites. Approximately, one third of the Latino population is under the age of 18, and thus, Latinos are considered to have the youngest population in the US.

In Massachusetts, the Latino population is currently estimated at 6.8 percent of the state's total population. As the youngest and fastest growing community in both the U.S. and in Massachusetts, this diverse community represents 19 Spanish speaking nationalities. The median age of Massachusetts' Latino population is 23.6 years of age compared with 33.6 years per the total population. In Boston, where a total of 589,141 people live, Latinos represent 14.4 percent of the population.

National data have demonstrated that Latinos have a two-fold increase in the risk of developing type 2 diabetes compared to the White population (Fig 2). A clear genetic predisposition for the development of diabetes plays an important role in establishing this risk. However, a significant role is also played by cultural and lifestyle factors. The rates of obesity and the pre-diabetic state in this population have also been reported to be significantly higher than in the Non-Hispanic White group. An alarming increase in the rate of type 2 diabetes in

Figure 1
The "New Majority":
Percent Distribution of US Population, 1995 to 2050 by Hispanic Origin



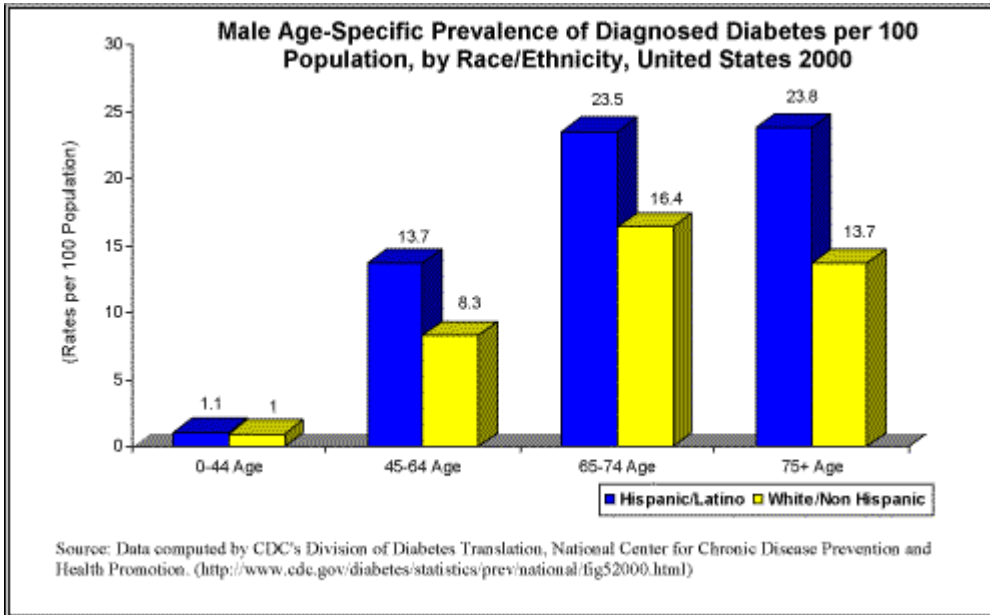
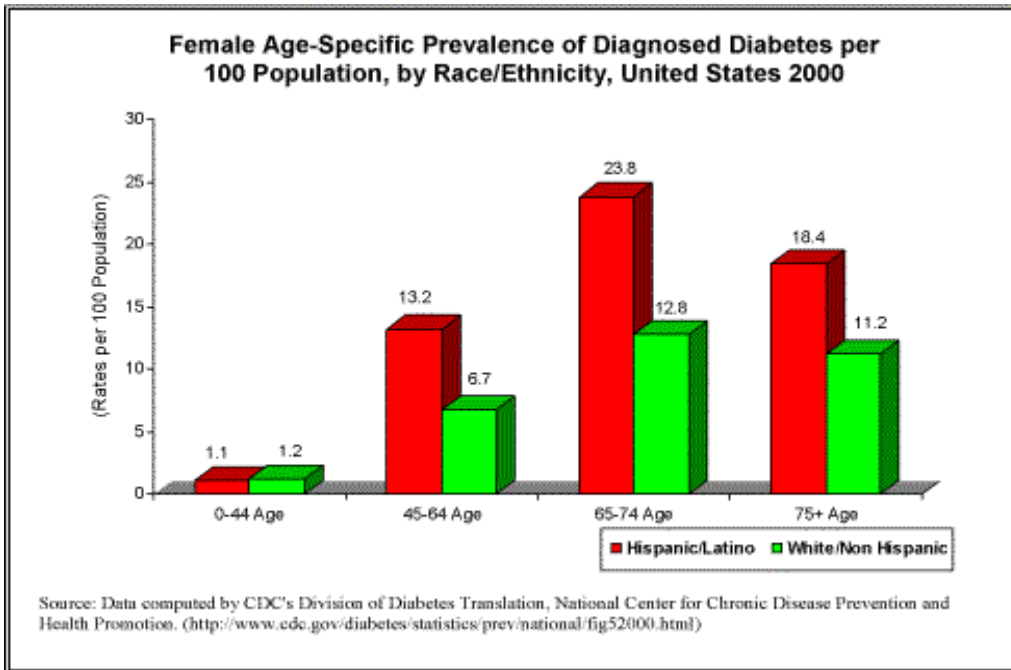
children and adolescents in the Latino population has been recently recognized, adding to the already dramatic burden of diabetes in this group. National figures also suggest that diabetes control is worse in Latinos when compared to Whites. This factor may partially explain the high incidence rates of diabetes-related complications reported in this population.

Between 1990 and 2000, there was a relative increase of 29 percent in the prevalence of diabetes in Massachusetts. Currently, 5.6 percent of the adult population in Massachusetts has diagnosed diabetes (age-adjusted rate). Based on the Massachusetts Department of Public Health (MDPH) Behavioral Risk Factor Surveillance System (BRFSS) Report 2000, 9.2 percent of African Americans, 12.8 percent of Latinos and 5.9 percent of Asians (18+) reported having been told that they have diabetes compared to 5.1 percent of Caucasians (age adjusted rates). The crude rates of diabetes for these groups are 8.0, 7.2, 1.0 and 5.2 respectively but age-adjusted rates are considered to be more useful, especially for Latinos since they are a younger population group as a whole. 5.2 percent of the City of Boston has diagnosed diabetes (MDPH-Bureau of Health Statistics, Research and Evaluation, 2000).

In addition to the increasing rates of diabetes and its related co-morbidities and complications, another concern affects our health care system and the community at large. According to the report by the Institute of Medicine, significant health disparities exist when comparing the White population with Minority groups, including the Latino Population. One of these evident disparities exists in the area of diabetes. The report states that Minorities usually receive a lower quality of care than Whites. These results are appreciated even after taking into consideration factors such as health insurance coverage, access to care, socioeconomic status, etc. Multiple patients' circumstances and cultural factors along with the general lack of cultural competence by health care providers and the limited availability of culturally oriented programs certainly contribute to these findings.

The Latino Diabetes Initiative at Joslin Diabetes Center was created to face these multiple challenges by integrating a comprehensive program that integrates culturally oriented patient care and education, community outreach, research and professional education activities.

Figure 2 - Male and Female-Specific Diabetes Prevalence as Provided by the CDC Division of Diabetes Translation



THE GOALS OF THE LATINO DIABETES INITIATIVE

- Improve the infrastructure at Joslin Diabetes Center to support the delivery of Culturally Competent Patient Care and Education, Community Outreach, Clinical Research and Professional Education Programs and Services to serve the Latino population with Diabetes or at risk for developing Diabetes.
- Provide culturally competent care and education to Latinos with diabetes and at risk for diabetes at Joslin Clinic through an efficient model that can improve specific clinical outcomes and serve as the model to develop and implement other efforts throughout the country.
- Raise awareness of the problem of diabetes among the Latino community and the availability of Joslin programs and services.
- Increase the level of knowledge and expertise among local, regional, national and international health professionals and paraprofessionals about diabetes prevention, education and treatment in the Latino population.
- Contribute to develop a better understanding of the multiple biological, social and cultural factors that influence the development and course of diabetes in the Latino Population through specific research studies in this group.

I. THE LATINO CLINICAL PROGRAM

a) Patient Care and Education Activities

Every Monday, the Latino Clinic at Joslin Diabetes Center offers individualized patient care and education to Latinos with diabetes in a culturally oriented environment. The clinic includes the services of a team of bilingual/bicultural providers: two physicians, one who specializes in gestational diabetes, a nurse educator, a registered dietician, an exercise physiologist and two medical assistants. We are also pleased to announce that during the past year, we have added an ophthalmologist and a social worker to the team. By expanding the number of specialists available to our Latino patients, we can more effectively treat the range of manifestations of diabetes and better support their needs. In addition to individual visits, every other week there are day-long educational classes. Patients learn the basics of diabetes care, blood glucose goals, medications, foods they can eat and recommended types of physical activity to best control their blood glucose. All classes are instructed in Spanish while using an interactive style to promote adult learning. Following the classes, patients return to see the endocrinologist and then the team of diabetes educators.

Since the program launched, there have been over 2,913 patient visits to the Latino clinic, both in clinical care and group education settings (Fig 3). In the first six months of 2005, attendance in every service category has increased over the previous year (Fig 4 and 5). Most notably, attendance in-group classes have increased year by year (Table 1 and Fig 6). We attribute this increase to more active case management, program promotion to local health professionals, and community outreach activities. These group classes are also an excellent opportunity for patients' family members to learn more about the disease in order to better support their loved ones.

Fig. 3 - Latino Clinical Program Growth
Total Number of Clinical and Educational Encounters per Semester Since Program Inception

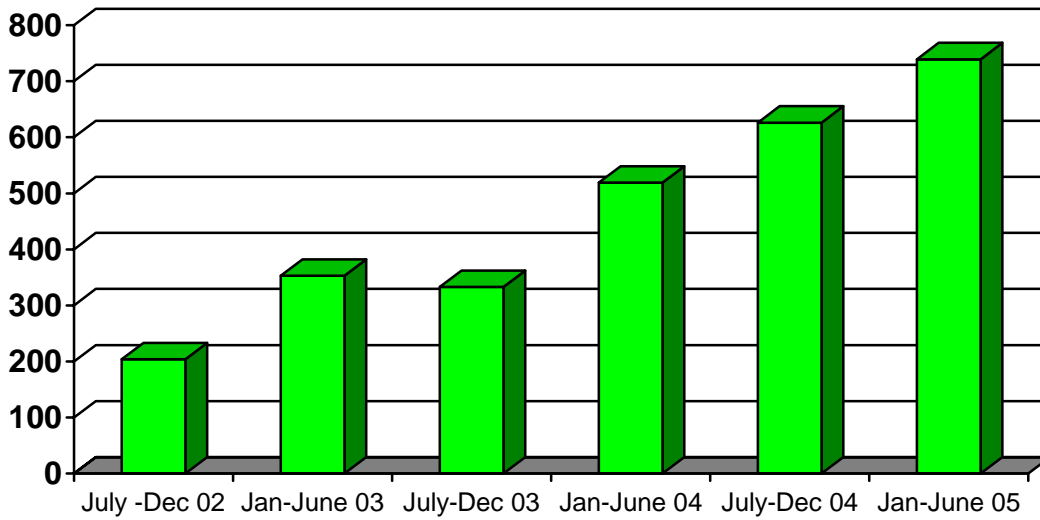


Fig 4 - Total Number of Individual Patient Encounters with a Physician Per Trimester

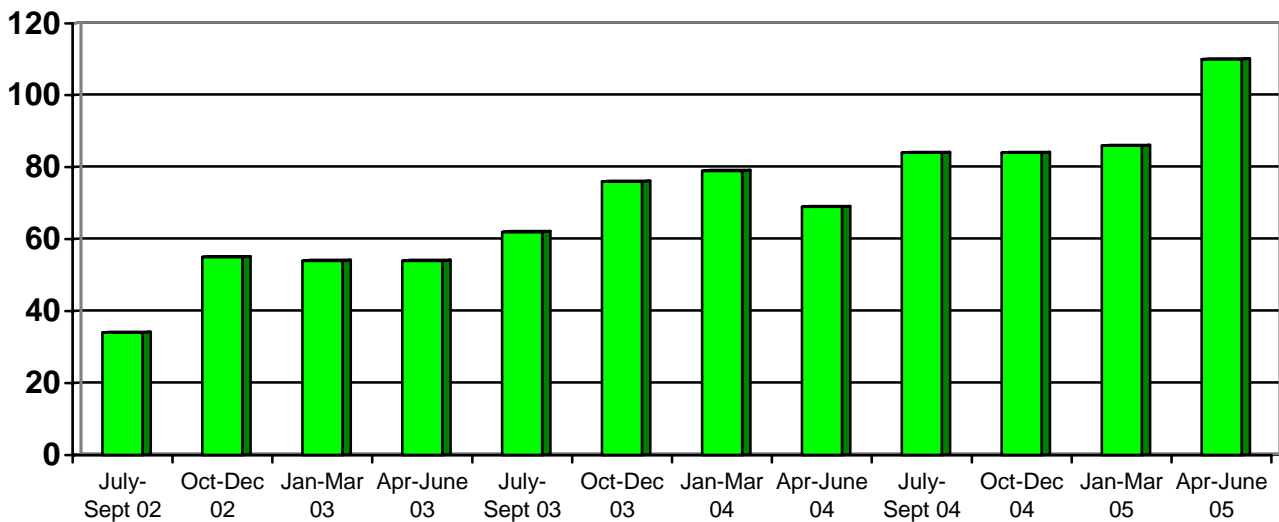
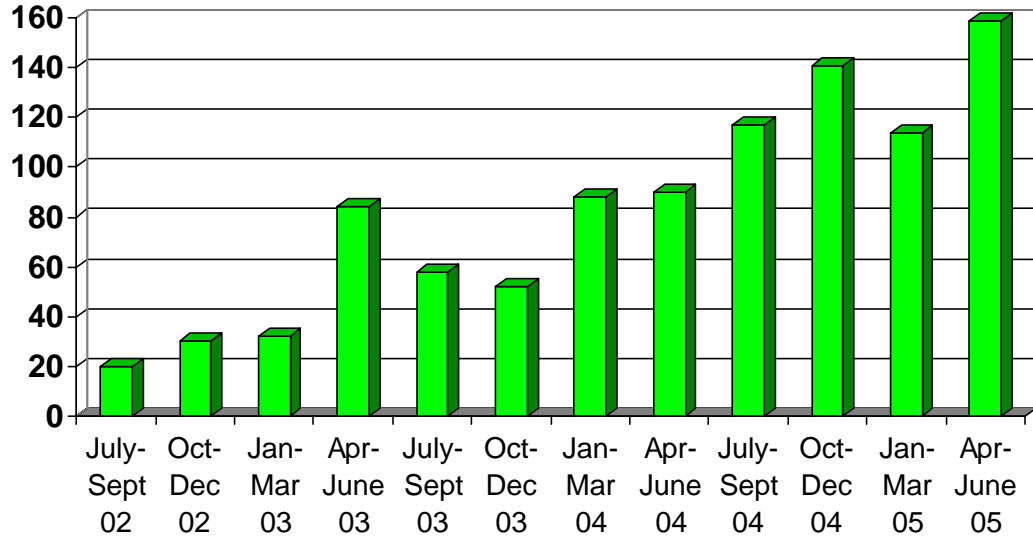


Fig 5 - Total Number of Individual Patient Encounters with an Educator per Trimester



Note: Graphic shows appointments with the Nutritionist, Nurse Educator or the Exercise Physiologist.

Table 1 - Attendance to Each Group Session in the Latino Education Program per semester since program inception.

Class	July - Dec 02	Jan- June 03	July- Dec 03	Jan- June 04	July- Dec 04	Jan- June 05
First Steps	2	12	5	33	39	57
Exercise Basics	1	22	21	35	38	45
What Can I Eat?	3	20	20	40	41	58
Monitoring Matters	1	16	20	39	41	54
Foods that Fit	0	13	18	40	41	56
Totals:	7	83	84	187	200	270

Class structure:

First Steps

First Steps is the foundation for the other classes in the series. Topics covered include:

- What diabetes is and how it affects the body
- How to care for diabetes
- Diabetes medications
- Prevention and treatment of complications
- How to handle high and low blood glucose
- Target goals for blood glucose
- What to do on a sick day
- Establishing a personalized education plan

Exercise Basics

This class, facilitated by an exercise physiologist, defines physical fitness and highlights the health impact of increased physical activity for people with diabetes. Participants will:

- Determine a fitness plan
- Identify barriers and solutions to being physically active
- Learn how to stay safe and active with diabetes and how to meet fitness plan goals

Frequent communication with a physician and a follow-up appointment with an exercise physiologist are recommended for ongoing safety and long-term success.

What Can I Eat?

A nutritionist facilitates this class and participants learn about the importance of meal planning, healthy eating and the impact of food on blood glucose. Topics covered include:

- Healthy eating
- Importance of food portions and label reading
- Nutrition and diabetes misconceptions
- Importance of record keeping of blood glucose and food intake

All are encouraged to use blood glucose monitoring and food records to evaluate the effect of a variety of foods on blood glucose levels. Participants will receive a Starter Meal Plan with specific attention to carbohydrates and portion sizes. Special attention is given to regional cuisines and fruit/vegetable preferences.

Monitoring Matters

Facilitated by a nurse educator, this class teaches beginners how to use a blood glucose meter, a glucose log and reinforces target blood glucose goals. It also covers:

- Benefits of accurate home blood glucose monitoring
- Blood glucose and A1C levels
- How to use blood glucose results to make basic self-care decisions

All participants are encouraged to make a 30-minute follow-up appointment with a nurse after *First Steps, Monitoring Matters* and *What Can I Eat?* to further individualize the participant's education plan, assess blood glucose control and progress toward established self-care goals.

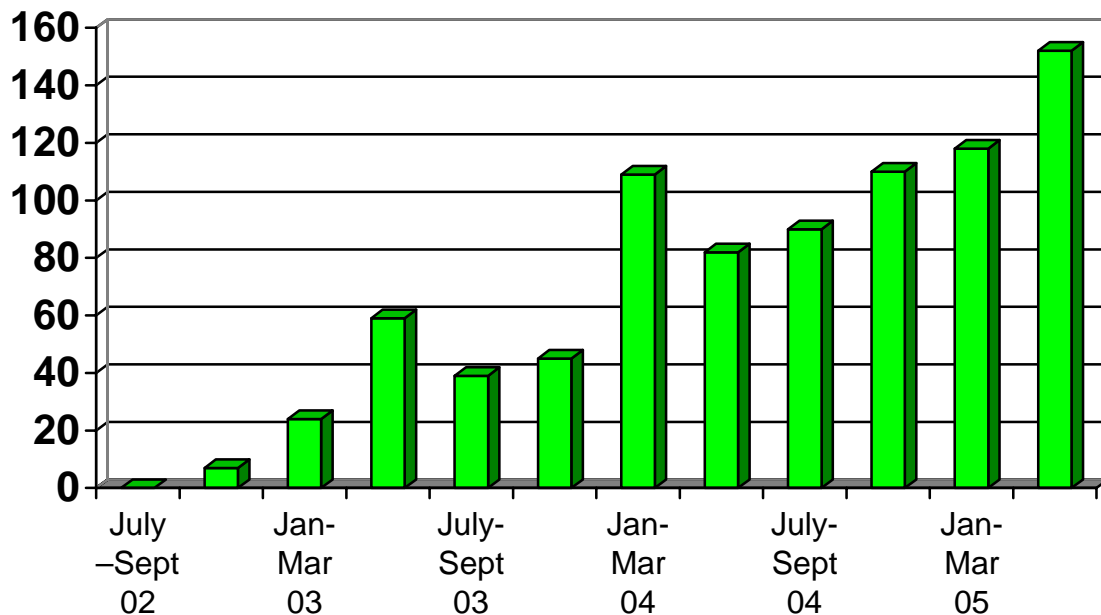
Foods That Fit

Facilitated by a nutritionist, this class builds on the information and reinforces the skills that were developed in *What Can I Eat?* Participants will learn how to:

- Adjust their Starter Meal Plan based on their blood glucose and food records
- Select healthy food choices for blood glucose, lipid and weight control when eating at home and dining out

Participants are encouraged to make a 30-minute follow-up appointment with a nutritionist to further individualize the Starter Meal Plan and assess progress toward their established meal planning goals.

Fig 6 - Total Number of Group Classes per Trimester



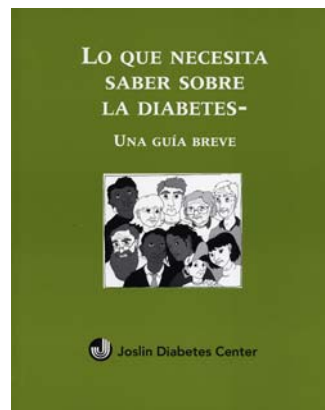
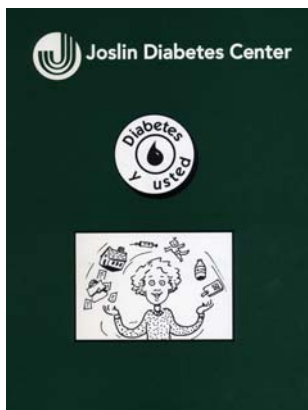
Group Classes are: First Steps, Monitoring Matters, Exercise Basics, What Can I Eat and Foods that Fit.

In June 2004, the Latino Initiative added a Latino Care Ambassador and Data Coordinator to our team. In this new role, Fernando Salcido, a native of Mexico, is truly the face of the Initiative to our patients. He provides case management for patients and their families, helping to assess and eliminate barriers to care. By interacting with patients directly as well as managing our database of clinical outcomes and in-take questionnaires, Fernando is able to make recommendations to program administrators that are based both in the quantitative reports *and* human insight into our patients. We are very enthusiastic about this addition to the team.

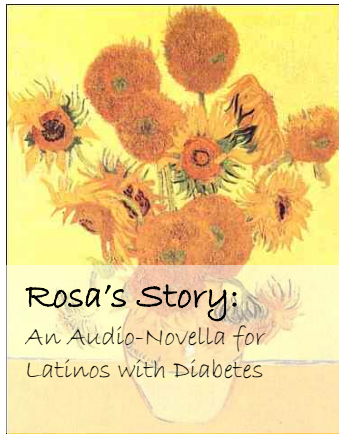
In the fall of 2004 support groups were added to the portfolio of activities and services. There are two modalities. The first is a traditional 1.5-hour, six-week group for patients referred by the Latino team. The second is a monthly drop-in session for self-referred patients and their families and friends. Based upon research and interviews with other centers that have used this approach, we believe that support groups will help us to further improve outcomes within our patient population. Adding mental health services—and particularly support groups that include extended family members—is especially important for our Latino patients. Research has repeatedly shown that family involvement is critical to the health care and support of Latino diabetes patients.

In March 2005, our Initiative hired Andreina Millan, a dietician trained in Venezuela, her country of origin. She is the Research and Patient Education Coordinator and focuses on organizing our patient education activities in close communication and collaboration with our educators. Andreina's role assures that our education program is perfectly embedded in the Joslin's Care structure and mission. Furthermore, she is implementing a rigorous evaluation strategy to assess the impact of all educational activities on our patients in the program. In addition, Andreina is the study coordinator for the research protocol assessing multiple cultural, social and medical factors that influence their adherence to treatment guidelines.

b) Culturally Appropriate Patient Education Products



The Latino Diabetes Initiative has contributed to translating and adapting existing Joslin patient education materials. More importantly, the Initiative is in



the final stages of completing the production of an innovative patient education tool developed in Spanish, specifically for Latinos with diabetes and those at risk for the disease. It is an audio-CD with an accompanying booklet for low-literacy audiences. This material presents the story of a Latino woman with diabetes. It is a simple, yet comprehensive and practical tool. The most important messages in regards to blood glucose control, nutrition, physical activity, medications and prevention strategies are presented. The project was conceived and developed based on our own clinical research in assessing barriers to care

within the Latino community and their preferred ways of learning. Our Initiative has collaborated with Dharma Cortes, an investigator in the Boston area dedicated to understanding and developing efficient methods to communicate health care messages to the Latino population. Based on these combined efforts and sources of experience, our team of diabetes educators and physicians developed the concept, authored a five-part educational script, and tested the product using focus groups. The project is now in production and we expect the audio-CD to be completed by fall 2005.

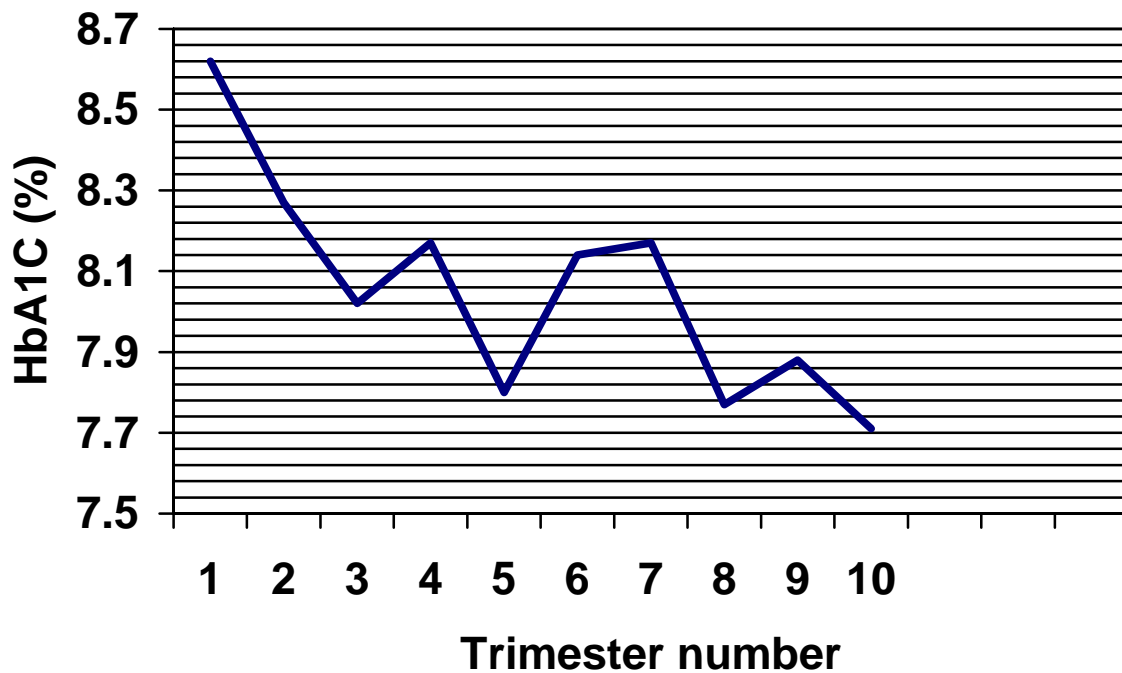
c) Clinical and Educational Outcomes Evaluation System

A central component of the Latino Program at Joslin is a rigorous evaluation system designed to assess outcomes within the patient population so that we may understand the efficacy of our program. We have established a database that tracks multiple variables in all our patients in the Latino Clinical Program. This system provides us with important information to assess and improve our services and operations. We routinely enter data on patients' weight, blood pressure and laboratory results, including their cholesterol profiles as well as other fats in the blood, blood glucose or sugar values and other general tests. A key assessment of diabetes control is the A1c test. This measurement provides accurate information on the blood glucose levels that people have had during the last three months. Our data on patients enrolled in the Latino Program show that the clinical care and education interventions are having a significant and positive impact on their A1c levels. The A1c level in patients who have regularly attended the Clinic for at least two years has dropped from 8.62 percent to 7.71 percent, as shown in Fig 7.

These results are very encouraging, as they show that the interventions we provide – one-on-one appointments, group classes, and educational tools – are making a significant difference in the medium to long-term care of Latino patients. Medical studies indicate that every 1 percent drop in mean A1c levels leads to a mean reduction of 22 percent in the risk of diabetes related chronic complications, including cardiovascular disease. (See Exhibit A for a more detailed discussion of these outcomes, including an explanation of the A1c test.) The fact that A1c levels are going down in this population is even more significant because we know that these levels usually increase over time, as shown in multiple studies that have tracked the course of the disease in thousands of patients throughout the world.

We currently have a total of 301 patients that have been seen in the Program, 177 (58.8 percent) are women and 124 (41.2 percent) are men. Their average age at the time of diagnosis of diabetes is 52.8±14.3 years.

Fig 7 - Mean A1c levels in patients that have regularly attended the Program



II. COMMUNITY OUTREACH

Joslin's Office of Community Outreach strives to extend the reach of the institution to the local community—particularly the medically underserved in the Greater Boston area. We do this by providing diabetes education, screening and health advocacy through community-based partnerships. Staff members attend local health fairs—including many Latino health and cultural festivals—and offer educational and screening services through churches, schools and various other community-based organizations. In addition, the Manager of Community Outreach Programs plays an active role in local advocacy initiatives, community consortiums and cultural competence training programs.

a) Community-Based Workshops and Screening Programs

We are pleased to announce that in late 2004, the Latino Diabetes Initiative received funding from the Tohmforde Foundation to implement a health screening and education program for at-risk parents of Boston Public School children. The *Familias con Salud* collaboration help to identify at-risk individuals at an earlier stage of the disease. Newly revised Health and Human Services data released in April 2003 shows that 40 percent of the adult population ages 40 to 74 has pre-diabetes, a condition in which blood glucose levels are higher than normal and the risk of developing type 2 diabetes is imminent. However, research has shown that by losing just 5 percent to 7 percent of total body weight and increasing physical activity, a person with pre-diabetes can delay or even prevent the onset of type 2 diabetes. Our *Familias con Salud* program is aimed at identifying these early cases of the disease to improve long-term outcomes in Latino patients.

The Office of Community Outreach participates in a number of health fairs and conferences to raise awareness about diabetes within medically underserved communities of Boston, as well as to help advocate for minorities within public health forums. The following is a list of events that addressed Latino health in 2004 and in the first half of 2005. At many of these events, Joslin offered both diabetes education as well as blood glucose screening.

Sister to Sister Urban Health Fair
American Diabetes Association EXPO
Dimock Women's Health Forum
Bowdoin Street Health Fair
Boston Public Schools' Health Fair
Ruggles Health Night at Ruggles Station
Latinos and Diabetes: A WGBH Outreach Evening
Harvard School of Public Health's Kids Fair Workshops
Boston Public Schools' Community Engagement Office Health Advocates Workshop

Diabetes Advocacy Day at the Massachusetts Statehouse
Men's Health Summit
Latino Betances Festival
Dominican Health Fair
Tufts Health Plan's Celebration of Latino Heritage
Familias con Salud Health Workshops
Consejos with the Latino Health Institute
Diabetes Education Workshop for Latinos sponsored by the Jamaica Plain Police Department

b) Community Health Center Training and Support

The Initiative has ongoing support relationships with two local community health centers: Dimock Community Health Center and Joseph Smith Community Health Center. We provide support for both centers through clinical and professional staff time, as well as program oversight services to improve the quality of community-based diabetes care.

Dr. Elizabeth Halprin, one of the endocrinologists in the Latino program provides clinical services to Latinos with diabetes at Joseph Smith Community Health Center once or twice a month. Dr. Enrique Caballero, also an endocrinologist, provided services to minority patients with diabetes at Dimock Community Health Center until the end of 2004, when the collaboration with this Center was modified after reaching some of the established goals and the funding cycle for some activities came to an end. Two of our educators, Roslyn Grant, R.D. and C.D.E. and Maria Koen, R.N. and C.D.E. continue to provide educational support to patients with diabetes at this community center once a month.

c) Public Relationships/Media Coverage

In September 2004, the Latino Initiative broadcasted on local TV Channel 5 ABC news show called *Cityline*. *CityLine* is Channel 5's award-winning urban news and feature magazine program. For a half hour every Sunday at 12:30 p.m., *CityLine* explores an array of compelling subjects at length. In September, the show was focused on diabetes and community-based approaches to care and education. Joslin's Latino Initiative became part of this broadcasted news by presenting Diabetes in Latino cases, along with interviews of several team members and segments showing the Latino Diabetes Initiative Clinic in session.

Joslin has been featured two times in 2004 on *Univision*, the national Spanish-language station. The first segment was an interview with Dr. Enrique Caballero in preparation for the ADA Expo in Boston's World Trade Center. The

second spot showed Joslin's participation in the successful Dominican Health Festival in Jamaica Plain.

Joslin's Latino Diabetes Initiative was featured in the August 2004 newsletter of the *Center of Excellence in Minority Health and Health Disparities* of the *Office for Diversity and Community Partnership at Harvard Medical School*.

The American Diabetes Association has asked Dr. Enrique Caballero to be their guest editor of *Diabetes Forecast en Español*, their main publication in Spanish for patients with diabetes. Members of the Latino team review content for each issue and Dr. Caballero's name is featured in the masthead.

The Dominican Republic's health and wellness magazine, *Revista Sana*, featured Dr. Caballero and the Latino Initiative in their premier edition in July 2004.

Members of the Latino Initiative talked about their experiences building the Latino Program and providing community-based care at the *Diversity Rx* conference in Washington D.C. in September 2004.

The new Latino Program at the *American Diabetes Association* has chosen Dr. Caballero to be their spokesperson on a national level, which means that when media outlets contact ADA for information about diabetes related to a new story or current event, they will offer Dr. Caballero as an expert in the area of diabetes care and Latino health.

The *Female Patient*, a new journal for medical professionals, has included information about Joslin's Latino Diabetes Initiative in a pullout section that discusses diabetes and women's health. This feature has been included in the issue of the journal, in September 2004.

Dr. Caballero was interviewed as an expert in the field to develop a comprehensive article on how diabetes affects the Latino Population for *La Opinion*, one of the most important newspapers in the West coast that reaches thousands of people. This article appeared in August 2005.

The Office of Community Outreach partners with a variety of institutions and agencies to increase the effectiveness of our programming. Most recently, partnerships with WGBH, the local public television station, and the Boston Public Schools have helped to raise awareness of our program as well as provide venues for education. Other important partners include:

Dimock Community Health Center
Bowdoin Street Health Center

*Joseph Smith Community Health Center
Beth Israel Deaconess Medical Center
Harvard School of Public Health
Massachusetts Diabetes Prevention and Control Program
Boston Public Schools' Community Engagement Office
Latino Health Institute
National Hispanic Medical Association
American Diabetes Association*

d) Latino Advisory Board

The Latino Diabetes Initiative created the *Latino Advisory Board* in order to work closely with the Boston community to better determine future activities and strategies to constantly improve this effort. It also establishes the proper setting for valuable feedback from members of the community, community activists, business professionals, health care providers, and patients who can guide us in how to improve our programs, leverage resources and operate most effectively.

Our first meeting already took place on Tuesday, February 1st, 2005. The second meeting is being planned for the fall of 2005.

During the first meeting, we presented to the board the current structure of the Latino Diabetes Initiative, its objectives, programs and activities. We received valuable constructive feedback from the group in regards to some of the results and accomplishments. At this meeting we assembled a top-rated team with excellent portfolio of services and activities, but our long way challenge is to scale the Initiative to have larger local and national impact.

The general goals for the advisory board, established at this first meeting are:

- Raise visibility on the Initiative locally and nationally.
- Gain expertise in penetrating Latino community at both the grassroots and institutional levels.
- Getting feedback from current activities.
- Transform members into a group of advocates.

There were a few items posed by the board that need to be taken into consideration in moving forward with the initiative. For instance, the group felt that at a certain point, specific activities to help the uninsured population need to be considered.

The advisory groups suggested to explore the possibility of creating a program on diabetes that can be used for an English as a Second Language (ESL)

course in order to educate the Latino community on this important topic while learning English.

As a result of this suggestion and with the full support of the Latino Diabetes Initiative and some key members of the Patient Education and Human Resources departments at Joslin Diabetes Center an ESL Course has been developed. Ashley Antony, a Harvard University pre-med student, developed the ESL course *Be Healthy!* during the summer of 2005. The goal is to formally collaborate with the corresponding organizations to implement this exciting program in the near future.

Latino Advisory Board Members

Morella Mendoza de Grossmann

Trustee, Joslin Diabetes Center

Dolores Acevedo-Garcia, MPA, PhD

Assistant Professor of Society, Human Development and Health
Harvard School of Public Health

Hortensia Amaro, PhD

Distinguished Professor of Health Sciences
Northeastern University

Dolores Calaf

Director, Lawrence Center, Cambridge College

Jenny Cintron

Director, ABCD Citywide Hispanic Center

Dharma E. Cortés, Ph.D.

Instructor, Cambridge Health Alliance/Harvard Medical School

Patricia Daly

Health Systems Specialist, Diabetes Prevention and Control Program, Department of
Public Health

Jose Duran

Executive Director, Hispanic Office of Planning and Evaluation

Rene Jarquin, MBA

Financial Adviser, Private Client Group, Merrill Lynch

Sara Suarez

Producer, Univision

Joseph Tavares

Producer, La Plaza, WGBH

Luis Valles, MD

Pediatrician

III. RESEARCH

The Clinical Research component of the Latino Diabetes Initiative is designed to strengthen our knowledge and understanding of the needs, characteristics, and challenges of Latinos living with or at risk for diabetes by increasing their participation in our existing clinical research studies and developing new studies for them. Much of the innovative research undertaken in the Latino Initiative is funded through the generosity of a private foundation in South America. Currently, we are exploring Latino patient adherence to diabetes treatment regimens as well as researching endothelial function (blood flow abnormalities) in two groups at risk for type 2 diabetes: Latino overweight children/adolescents and young individuals (18-40 y/o) with a family history of type 2 diabetes.

a) Adherence to Treatment and its Determinants in Latino Patients with Type 2 Diabetes

The purpose of this study is to explore the relationship between Latino patients' personal, medical, social and cultural factors and their ability to follow diabetes self-care recommendations. We have enrolled 133 subjects in the study who were identified through the Latino Clinical Program. The following are some of the preliminary results in this study:

We have found that the patients with high adherence to treatment have a higher family support compared with the low adherence group (72 percent Vs 33.3 percent $p=0.017$), having a Spanish-speaking health care provider (76 percent Vs 41.7 percent, $p=0.034$), feeling comfortable with their health care provider (90 percent Vs 50 percent, $p=0.011$) and absence of depression (80 percent Vs 53.7 percent, $p=0.014$). When comparing patients that have depression with those without it, the following variables were significantly higher in the depression group: Female gender (67.8 percent Vs 45.5 percent, $p=0.047$), unemployment (66.7 percent Vs 45.5 percent, $p=0.037$), lack of social support for diabetes care (76 percent Vs 52 percent, $p=0.041$), low adherence to medications (78.1 percent Vs 22 percent, $p=0.014$), perception of bad health (78 percent Vs 43 percent, $p=0.001$), lower diabetes knowledge (81.1 percent Vs 19 percent, $p=0.043$) and higher diabetes related distress as measured by the PAID score (40 Vs 24, $p=0.001$). Higher PAID scores were also found in patients with A1c levels higher than 7 percent when compared to those with A1c below 7 percent (35.3 Vs 19.23, $p=0.007$). In our population comprised by Latino patients living in a multicultural society such as that in the United States of America, the most important factors associated with high adherence to treatment recommendations were family support, having a provider that speaks the same language, good rapport with the health care provider and absence of depression. We have confirmed that depression is an important factor that influences diabetes treatment and is associated with several demographic and social characteristics. Taking into consideration all these factors appears to be important in designing and implemented

culturally oriented patient care and education programs for people with diabetes living in a multicultural society.

These preliminary results will be presented at the forthcoming Annual Meeting of the European Diabetes Association, in Athens in September 2005.

b) Endothelial Function Studies

There are two ongoing studies in which we are evaluating the presence of endothelial dysfunction in Latinos at risk for type 2 diabetes. One study is in overweight children and adolescents between the ages of 10 and 18 and the other one in young adults between 18 and 40 years old, who are also overweight and have family history of type 2 diabetes. The endothelium is the inner layer of the vessels (arteries). It is possible to assess whether this structure is functioning well through multiple tests, including the measurement in blood of some substances and through high-resolution ultrasound images of the brachial artery, located in the arms. All these are simple, non-invasive procedures that are highly reproducible and accurate. Through some of the work that Dr. Caballero conducted a few years ago, it was noticed that individuals at risk for type 2 diabetes already have significant abnormalities in endothelial function. The presence of endothelial dysfunction may predict the development of type 2 diabetes and cardiovascular disease. However, it is not known if these findings in the White population extend to other minority groups, such as the Latino population. We recently finished the enrollment of participants in these studies and we are now analyzing the data.

c) Latino Women with Diabetes and Body Image

This study represents collaboration with Dr. Patricia Weitzman, based at the Psychiatry Research Department of Brigham & Women's Hospital. This research project will explore the beliefs that diabetic Latinas have regarding concepts of body size and physical beauty, and how these concepts may affect decisions to exercise and/or follow a diabetic diet, the experiences in help seeking for their diabetes, including their interactions with health care professionals and the views of Latino women with diabetes about how best to meet their preventive needs.

d) Genetics of Cardiovascular Disease

This study represents an existing collaboration with Dr. Alesandro Doria, Investigator in the Department of Epidemiology and Genetics at Joslin Diabetes Center. The purpose of this study is to identify possible genes that may increase the risk of developing cardiovascular disease among patients with type 2 diabetes in various ethnic groups.

IV. PROFESSIONAL EDUCATION

a) Continuing Medical Education (CME)

Through the department of Professional Education at Joslin Diabetes Center, we have implemented several national series of live symposia to address the unique issues that arise in treating Minorities with diabetes, with an emphasis on the Latino Population. These programs respond to the need to raise awareness and educate health care professionals in the area of diabetes and minority populations in the United States. To the present, three national series on diabetes in culturally diverse populations have been established. A total of 3,500 professionals have attended these live symposia. These series have helped providers understand the toll of diabetes within the Latino population, barriers to care, innovative approaches to improving patient compliance and outcomes and the importance of cultural competence in clinical practice.

The series that have been implemented are presented below. Information on their dates, program location and number of people that attended each symposium are included.

Series: Diabetes and Insulin: Challenges and Opportunities in the Latino Population.

Course Date	Location	Attended
11/12/03	New York, NY	322
11/13/03	Washington, DC	112
12/2/03	Miami, FL	134
12/3/03	Houston, TX	124
12/4/03	San Diego, CA	68
12/10/03	Chicago, IL	169
12/11/03	Cleveland, OH	78
Total		1,007

Series: Type 2 diabetes and Macrovascular risk: Strategies in Culturally Diverse Populations.

Course Date	Location	Attended
3/29/05	Los Angeles, CA	156
3/30/05	Dearborn, MI	189
3/30/05	Phoenix, AZ	151
3/31/05	Atlanta, GA	111
4/5/05	Houston, TX	127
4/6/05	New York, NY	420
4/12/05	Miami, FL	128
4/13/05	Philadelphia, PA	134
Total		1,416

Series: Treating diabetes with insulin: Multicultural Strategies

Course Date	Location	Attended
6/14/05	Los Angeles, CA	125
6/16/05	Miami, FL	75
6/21/05	Boston, MA	124
6/22/05	Atlanta, GA	111
6/23/05	New York, NY	337
6/29/05	Dearborn, MI	192
7/27/05	Dallas, TX	113
Total		1,077

Total Number of professionals attending these continuing medical education series: 3,500

We are pleased to announce that more programs will be funded through the Department of Professional Education at Joslin Diabetes Center and will be implemented during the Fall 2005 and Spring 2006.

In addition, Dr. Enrique Caballero, Director of the Latino Diabetes Initiative was appointed last year as the chairman of the Latino Education Program of the American Diabetes Association. This program has also provided thorough information on diabetes in Latinos to multiple health care professionals attending major national meetings, such as the American Diabetes Association Meeting, the Postgraduate American Diabetes Association Course and the National Hispanic Medical Association Meeting.

b) Programs for Allied Health Professionals

The Latino Diabetes Initiative has contributed to the Joslin Annual Allied Health Professional Course by presenting a lecture on diabetes in minorities, sometimes with an emphasis on the Latino Population. The educators in the Latino Program usually give these lectures.

c) Program for Medical Students

The Latino Diabetes Initiative has contributed to the education of students at Harvard Medical School in several ways:

- A total number of 7 students in their second year at Harvard Medical School have rotated for a period of one month to observe the activities in the Latino Clinical Program. This rotation is a formal component of their elective ambulatory clinical program.
- Dr. Caballero is also a member of the culturally competent clinical care committee at Harvard Medical School and recently started his activities

as tutor of the module on culturally competent care for medical students at this prestigious university.

- In the near future, rotation through the Latino Program will be expanded to medical students at other Boston City-based medical schools.

d) Program for National and International Visitors

Physicians and health care professionals from multiple countries have been interested in coming to the prestigious Joslin Diabetes Center to observe and participate in the activities in our Clinical Program. This has also been an excellent opportunity for international visitors to learn more about the multiple high level clinical, educational and research activities conducted at our Institution. Physicians and allied health professionals from Brazil, Venezuela, Colombia, Mexico and Spain have recently visited our program. They have spent between 1 and 4 months at our Institution as part of their visitor program to the Latino Diabetes Initiative.

e) Publications

Lerman-Garber I, Villa A.R, **Caballero AE**. Diabetes and Cardiovascular Disease. Is there a true Hispanic Paradox? *Rev Invest Clinic*. 2004; 56 (3): 282-296

Caballero AE, Delgado A, Naranjo A, Castillo JL, Cabrera T, Braun L, Aguilar-Salinas CA, Gomez-Perez FJ. Metformin Improves Markers of Endothelial Activation but not Markers of Inflammation in Subjects with Impaired Glucose Tolerance. *J Clin Endocrinol Metab*. 2004; 89: 3943-3948

Lerman I, Lozano L, Villa AR, Hernandez-Jimenez S, Weinger K, **Caballero AE**, Salinas CA, Velasco ML, Gomez-Perez FJ, Rull JA. Psychosocial factors associated with poor diabetes self-care management in a specialized center in Mexico City. *Biomed Pharmacother* 2004; 10: 566-70

Caballero AE, Habershaw GM, Pinzur MS. Preventing amputations in patients with diabetes. Caring for diverse populations. *Patient Care* 2000; 05: 113-133.

Caballero AE. Obesity, Insulin Resistance and Endothelial Dysfunction. The road to type 2 diabetes and cardiovascular disease. *Obesity Res*. 2003; 11: 1278-1289

Caballero AE. Endothelial dysfunction, Inflammation and Insulin Resistance: A focus on subjects at risk for type 2 diabetes. *Current Diabetes Reports*. 2004; 4: 237-246

Caballero AE. Diabetes in minority populations. In: Joslin's Diabetes Mellitus. LW & W; 2005. 14th Ed. p 505-524.

Romero A, **Caballero AE**. Primary prevention of type 2 diabetes. In *The General Treatment of The Diabetic Patient* by Lerman GI. McGraw-Hill, Mexico.

Caballero AE. Diabetes in Hispanics or Latinos. Genes, environment, culture and more. *Current Diabetes Reports*. 2005; 5 : 217-225

Caballero AE . Metabolic and vascular abnormalities in subjects at risk for type 2 diabetes: The early start of a dangerous situation. *Archives of Medical Research* 2005; 36 : 241-249

Caballero AE. Building cultural bridges: understanding ethnicity to improve acceptance of insulin therapy in patients with type 2 diabetes. *Ethnicity and Disease*. In press.

Exhibit A: Statistics and Outcomes for the Latino Clinical Program

Patient Encounters

The volume of visits to the Latino Clinic – both one-on-one and group classes – has increased steadily since inception. We attribute these increases to strong public relations activities – including television interviews and news media coverage – as well as strong community outreach activities and positive word-of-mouth.

Chart of attendance per quarter:

Quarters	MD Visits	RN Visits	RD Visits	EP Visits	Total
July-Sept 2002	34	20	20	0	74
Oct-Dec 2002	55	30	35	3	123
Jan-Mar 2003	54	32	37	9	132
Apr-June 2003	54	28	42	14	138
July-Sept 2003	62	37	4	17	120
Oct-Dec 2003	76	30	13	9	128
Jan-Mar 2004	79	45	31	12	167
Apr-June 2004	69	35	31	24	159
July-Sept 2004	84	57	38	22	201
Oct-Dec 2004	84	52	49	40	225
Jan-Mar 2005	86	61	26	27	200
Apr-June 2005	110	75	38	46	269

Information About the Hemoglobin A1c Test:

While home blood glucose monitoring is like a snapshot, hemoglobin A1c testing is more like a full-length movie – it provides a view of how your blood glucose level has been doing over a period of two to three months. The normal range for an A1c test in a person without diabetes is 4 to 6 percent and the goal for a patient with diabetes is to maintain an A1c under 7 percent. Research shows that for every 1 percent drop in A1c, the risk of complications decreases by an average of 21 percent.