Member, International Committee of Diabetes Magazines, International Diabetes Federation

DiabetesWatch

an affiliate society of the Philippine Medical Association (PMA) ■ Philippine College of Physicians (PCP) ■ member of the International Diabetes Foundation (IDF)

YEAR XIV, NO. 2 JULY - DECEMBER 1997

2nd JOINT ANNUAL CONVENTION of PDA & PSEM

The 2nd Joint Annual Convention of the Philippine Diabetes Association and the Philippine Society of Endocrinology and Metabolism will focus on the "Current Issues in Endocrinology and Diabetes: From Molecular to Clinical" on December 9-10, 1997 at the Century Park Hotel.

This year's annual convention will have a blend of overseas and local speakers discussing a variety of issues in endocrinology and diabetes. Among the foreign speakers are Prof. Harry Keen from UK who will share his expertise on Insulin Action and Diabetes; Dr. Elizabeth Chua of Australia will lecture on Recent Trends in Management of Thyroid Cancer; Dr. Aw Tar Choon of Singapore will talk on Trends and Development in Automation for Endocrine Immunoassays.

There will be symposia on:

I. Unfolding Realities in Diabetes Mellitus

- *Nutritional Thrift: A Genetic Trait of Type 2 Diabetes Mellitus* by Dr. Augusto D. Litonjua
- *Pancreatic Transplantation: Is it an Alternative to Long Term Diabetes Management?* by Dr. Ma. Teresa P. Que

II. Thyroid Diseases

- *RAI Usage in Thyroid Diseases* by Dr. Federico B. Cruz
- *Role of FNAB in Diagnosis of Thyroid Diseases* by Dr. Agustina Abelardo
- *Use of RAI Therapy in Patients with Negative Scans* by Dr. Elizabeth Chua

III. Endocrine Incidentalomas

- *Pituitary Incidentaloma* by Dr. Lina Lantion-Ang
- *Thyroid Incidentaloma* by Dr. Joselynna S. Anel-Quimpo
- *Adrenal Incidentaloma* by Dr. Cynthia Halili-Manabat

IV. Nutrition in Diabetes Health Care Delivery

- *Role of Nutritional Anti-Oxidant in the Management of DM* by Dr. Ricardo E. Fernando
- *Glycemic Index Factor in Optimal Glucose Control* by Mrs. Imelda Q. Cardino, RND
- *Enternal Feeding in Criti-*

(Continued on page 6)

MABUTI PA ANG LANGGAM ALAM... THE PREVENTION CONTINUES DIABETES AWARENESS WEEK 1997

Josephine Carlos-Raboca, MD
Makati Medical Center

It's been five years since we began observing diabetes awareness week. It is our hope that our efforts to increase public awareness on diabetes mellitus may somehow improve the health and quality of life of fellow Filipinos.

The Philippine Center for Diabetes Education Foundation (Diabetes Center) through its

(Continued on page 3)

Senator Freddie Webb cuts the ribbon at the opening of the Diabetes Fair at the Glorietta. He was assisted by Dr. Josephine Carlos-Raboca, chair; Dr. Cynthia Halili-Manabat, co-chair; Dr. Laura Trajano-Acampado, in-charge of the dance contest; Ms. Imelda Cardino, dietician educator; and Ms. Susan Trinidad, diabetes nurse educator, in-charge of the Diabetes Fair.

A SURVEY OF TYPE 1 DIABETES IN SELECTED AREAS IN METRO MANILA

Araceli A. Panelo, MD
Institute for the Studies on Diabetes Foundation, Inc.

In March 1996, the IDF Consultative Section on Childhood and Adolescent Diabetes sponsored a Leadership Needs Assessment Workshop for the Western Pacific Region, in Sydney, Australia. The Philippines was represented by Dr. Augusto D. Litonjua, representing the Philipine Diabetes Center and Dr. Araceli A. Panelo, substituting for Dr. Ricardo E. Fernando, from the Institute for Studies on Diabetes Foundation, Incorporated.

Each country was asked to lay out their most pressing and urgent issues with regards to childhood diabetes. The Philippine delegates agreed that our most pressing problems are the dearth of reliable epidemiologic data and lack of awareness for childhood diabetes among health professionals and the community.

We decided to work together in order to get data on new and old cases of childhood diabetes in areas accessible to the members of the ISDFI and the Diabetes Center.

The goals of the survey, the classification, case definition and approaches to identification of cases, primary and secondary ascertainment were adopted from the Diamond Project: An International Epidemiological Study on Childhood DM as lectured to us by Dr. Edwin Gale from England.

(Continued on page 4)

Your President Speaks . . .

Lina C. Lantion-Ang, MD
PDA, President

KEEPING WITH TIME AND DEVELOPMENT IN DIABETES MELLITUS

Progress in Diabetes Mellitus has at last appeared in the horizon. The growing concern and a better understanding of the fundamental pathophysiologic problem of the disease has led to the successive waves of both enthusiasm and disappointments in diabetes care around the world.

At the recently concluded 16th IDF Meeting in Helsinki this year, young investigators presented admirably designed research works in search for a more fundamental mastery of "Diabetogenesis" and/or "Diabetogenolysis." The areas where continuing investments in basic and clinical research work are directed: genetics of Type 2 diabetes mellitus; insulin signalling and insulin resistance; obesity and lipid metabolism; micro and macrovascular complications; pancreatic transplantation; and novel modalities of treatment to mention a few.

Novel, effective and safe therapies await the patient and clinician, but we should not neglect the implementation of preventive regimens that have been proven to reduce the risk of Diabetes and its complications, and have already improved the quality of life of most diabetics.

Patient and family education need support from a knowledgeable, caring and compassionate diabetes health care team. Patient empowerment is a splendid expression of a holistic therapeutic approach that compliments total Diabetes Care.

As we move on into the 21st century, prevention of Diabetes Mellitus must remain our ultimate goal. Merry Christmas and Happy New Year to all!

9th AFES CONGRESS

After the very successful AFES Congress held in Manila 2 years ago, this year, endocrinologists, diabetologists, internists and other medical practitioners will travel to Singapore to attend the 9th Congress of the Asean Federation of Endocrine Societies from December 3 to 6, 1997. The congress will focus on the "Advances in Asean Endocrinology." Respected speakers like Prof. R.C. Kahn, G. Alberti, R.G. Rosenfeld, A. Weetman, S.M. Shalet are just a few of those invited to talk on the recent Advances in Asean Endocrinology. The congress venue is Shangrila Hotel, Singapore.

9th INTENSIVE TRAINING COURSE FOR DIABETES TRAINORS HELD

. The 9th Intensive Training Course for Diabetes Trainors of the Diabetes Center was held from October 13 to 18, 1997 at the Makati Medical Center.

Participants to the course who were conferred the title Assistant Diabetes Trainor included: **Iloilo Mission Hospital** - Dr. Ma. Antonette Lourdes L. Aportadera, Jose Ariel Lanada, R.N., Bernardita S. Sinfuego, R.N.D.; **Medical Center Parañaque** - Dr. Carlos de Castro, Haydeliza Geraldez, R.N., Fausta Natividad Salvador, R.N.D.; **Air Force General Hospital** - Dr. Preciosa Pornillos, Wilma Serrano, R.N., Amelia Ramona Espiritu, R.N.D.; **Sto. Tomas University Hospital** - Dr. Demosthenes Lumabi, Conchitina Araceli G. Anis, R.N., Ma. Bernadette Garcia Platon, R.N.D; **The Medical City** - Juvy R. Panisales, R.N., Fides Salve Palencia, R.N.D; and for completion, **Subic Dispensary** - Dr. Merlinda Tubera, Lota Castillo, R.N., and Zoraida Alqueza, R.N.

The group was inspired by the President of the Philippine Diabetes Association, Dr. Lina C. Lantion-Ang at the closing ceremonies. Through her fervent commitment to education, she was able to instill the importance of dedication to their work in the education process.

The faculty of the 9th Training Course were: Dr. Mary Anne Lim-Abrahan, Dr. Laura Trajano-Acampado, Dr. Lina C. Lantion-Ang, Dr. Thelma Dimalanta-Crisostomo, Dr. Ruby T. Go, Dr. Augusto D. Litonjua, Dr. Cynthia

(Continued on page 6)

MEANDERINGS.....

Augusto D. Litonjua, MD
Chairman, Dept. of Medicine
Makati Medical Center

NEW DRUG ON THE HORIZON

What is feared most when one develops diabetes mellitus are its complications. It is known that when the blood sugar is very well controlled these complications can be prevented from appearing, or when already present may retard their progression. These complications are centered on the blood vessels, notably the arteries which carry blood from the heart to the different parts of the body. When the big arteries are involved, patients run the risk of developing heart disease and strokes, as well as non-healing wounds of the legs or feet. On the other hand, when the very small arteries are damaged by the high blood sugar, the consequences could be blindness and kidney failure, and varying degrees of nerve disease.

What can normalize the blood sugar in the diabetic? First and foremost, we rely on a proper diet and increased physical activity or exercise which is done on a regular basis. When these fail to properly control the blood sugar, we then turn to a variety of drugs, e.g.,

1. *Sulfonylureas* - these are a class of drugs which lower the blood sugar by evoking insulin release from the pancreas. It is the insulin released which lowers the blood sugar and not the drugs themselves. Thus, if there are no insulin producing cells in the pancreas, these drugs will not work.

2. *Metformin* - this drug lowers the blood sugar by preventing the liver from producing too much sugar, primarily lowering the fasting blood sugar. There is proof that the drug also pushes the sugar from the meal into the muscle, lowering the blood sugar after eating. Metformin lowers the blood sugar even in the absence of the pancreas, although not sufficiently so.

3. *Alpha glucosidase inhibitors* - rice, bread, cereals, etc. are complex carbohydrates which need to be digested in the intestines to be absorbed. The absorbable form of these foods is glucose which is the sugar responsible for the high blood sugar in diabetics. Alpha glucosidase inhibitors delay the conversion of complex carbohydrates to glucose, thus blunting the rise of the blood sugar after meals. If what is eaten is already simple sugar (ice cream, soft drinks, syrups, etc.), then the drug cannot lower the blood sugar since what is taken in into the body is already in its simplest

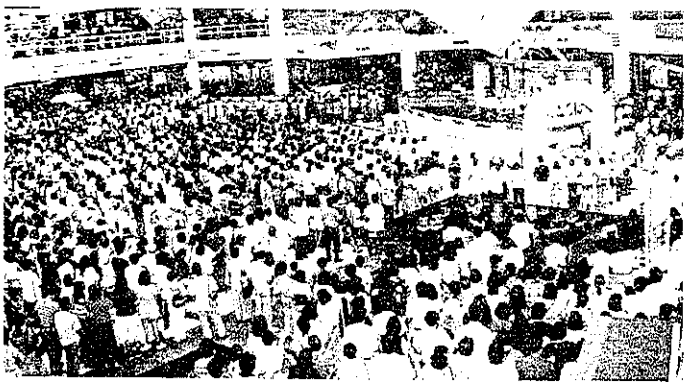
(Continued on page 11)

Mabuti...

(from page 1)

president, Dr. Augusto D. Litonjua, and the Philippine Diabetes Association (PDA), has been the main proponent of this activity. In cognizance of the increasing number of diabetics worldwide, we are making an effort in our part of the world to contain the epidemic of diabetes by the year 2010.

Senator Freddie Webb, the keynote speaker at the opening program at the Glorietta Ayala Center, emphasized the "need to foster our goals of diabetes prevention through lifestyle changes." He said, "the fight against diabetes is a battleground where there are no aggressors and combatants but only victims." Ignorance and complacency aid-and-abet diabetes, and it is our duty to correct this to reduce its victims. The way to combat the enemy is through the proper diet: low in fat and sweets, and with regular exercise.



Delegates from the different Diabetes Clinics of Metro Manila Hospitals.

Organizational meeting of the Medical Bureau of the Diabetes Center with the Chairman of the Board, First Lady Amelita Ramos at Malacañang Palace.

Our activities this year were three-pronged: educating the public through the media; promoting exercise through a dance contest; and early detection through screening for diabetes and its complications. Diabetic eye screening (Operation: Silip Mata) was conducted nationwide in cooperation with the Philippine Society of Ophthalmology and Centramed Greenline-Vision. The results of the Operation: Silip Mata will be published in the next issue.

A Survey...

(from page 1)

Goals

Primary:

1. Collection of accurate population based data on incidence of childhood diabetes.

2. To monitor for IDDM incidence globally.

3. To provide necessary basis for comparative studies of risk factors for IDDM.

Others: Increases or decreases of disease occurrence during the 10-year period, 1990-1999.

1. Monitor mortality of diabetes; monitor life expectancy; and identify means of reducing excess preventable mortality among children and with IDDM.

2. To evaluate primary component of health care insulin

3. To evaluate economic costs

4. To provide opportunity for training in diabetes epidemiology

Cases included in the survey had to be diagnosed by a physician as diabetic; must have been on insulin before his 15th birthday; and was residing in the area at the time of registration. Pertinent personal data were collected including ethnic group, date of diagnosis and first insulin injection, and family history. Cases were identified from primary and secondary sources including hospitals, national registries, physician surveys, camps, etc.

Preliminary results of the survey for new cases of IDDM (1996) conducted in selected areas are as follows: 1 out of 38,043 children below 15 yrs old residing in San Juan; 1 out of 76,775 children in Bacoor, Cavite; 1 out of 27,410 children in Dagupan City; 1 out of 11,842 total population of Sta. Maria, Bulacan; 5 out of 69,727 total population of Bocaue Bulacan; 1 out of 69,968 children residing in Los Baños, Laguna; and 1 out of 139,625 population in Sta Rosa, Bulacan have type 1 diabetes mellitus. This is a continuing survey which hopes to bring in important epidemiologic data on childhood diabetes in our country.

Everything...

(from page 8)

Your exercise regimen may need to be checked as well. Are you complying with the drug regimen or are you stressed or do you have any illness? In other words, there are many reasons why your sugar is up and you have to sort out all these problems. If still uncontrolled, your doctor may shift you to a combination of insulin with tablets or to insulin alone regimen.

I am using two drugs, is this safe?

The use of combination of drugs that increase insulin availability and drugs that decrease insulin requirements is likely to be the most effective therapy to control blood sugars in Type 2 diabetes. More common combinations are sulfonylurea drugs with either metformin or acarbose.

I heard of a new drug, troglitazone, how could it help me?

Troglitazone has been extensively studied abroad. This drug is one of the drugs used to determine if we can prevent Type 2 diabetes. It increases insulin action and allows for normal glucose metabolism to occur at reduced plasma insulin levels. It is effective when combined with sulfonylureas or insulin. Other benefits include decrease in blood pressure and decrease in plasma free fatty acids and triglycerides.

Are my medicines to be taken for life?

Of course, you know that diabetes and up until now there is no cure for it. Therefore, we should take our medications regularly.

The drugs mentioned here should only serve as a guide. Do not make changes in your diabetes regimen unless you have talked to your doctor.

We welcome your comments and suggestions. Please fax us at 531-1278, PDA office.

RECENT RE-EVALUATION OF DIFFERENT PDA CHAPTERS

Tommy S. Ty-Willing, MD
Metropolitan Hospital

Last February 22, 1997, together with Mr. Edgar N. Zaragoza and our secretary, Ms. Cecil Sto. Tomas, I took a mid-afternoon flight to Legaspi City. That evening, a consultative meeting with the PDA Albay Chapter represented by Drs. Lina delos Reyes-Asidio and Jean Cortes was held. Matters related to the chapter activities and contingencies for the 12th Diabetes Workshop were discussed. After an early breakfast the following day, we motored to Sorsogon to touch base with Dr. Amado Jose over lunch. Problems related to the chapter were straightened out and paved the way for its reactivation. After lunch, we took a long drive to Naga City to meet with our Camarines Sur chapter represented by Dr. Rosemen Fernando. Plans of the chapter and support for the workshop and formation of a Camarines Norte chapter were discussed.

The efforts of this trip saw the realization and induction of the Bicol Chapter on April 7, 1997 during the 12th Diabetes Workshop.

Catanduanes sent Dr. Virginia Masagca as an observer with the intention to set up a chapter soon.

March 8, 1997 saw the induction of the officers of the PDA Lipa Chapter.

An early morning flight on March 22, 1997 took us to General Santos where plans to establish a new chapter were set. Shortly after breakfast, we took a land trip to Davao City. Induction of the new set of officers was done and plans for the 13th Workshop were discussed.

PDA - NEGROS OCCIDENTAL CHAPTER REPORT

Marian Joyce Garcia-Co, MD
President, PDA-NOC

Four years since it was created to institutionalized the fight against diabetes, the Negros Occidental chapter of the Philippine Diabetes Association continues to break ground in the battle.

1997 saw PDA-NOC strengthening its networking and organizational capabilities and in the process, also stepping up the campaign against diabetes.

This was highlighted by the 4th celebration of Diabetes Awareness Week in Bacolod City. The celebration was unprecedented in many ways - in the volume and variation of activities conducted, in the number of sponsoring groups and volunteers, and in the volume of people who participated and benefitted from the activities.

Launched by an educational and awareness-raising motorcade around the major thoroughfares of the city, the Diabetes Awareness Week revolved around the theme, "Mabuti pa ang langgam... alam. The prevention continues...", a take-off from the national slogan.

Activities for the week included daily free blood sugar testing for everyone; free ECG and consultation for PDA members.

As in the past celebrations, there was also an educational lecture module that is already a popular activity, drawing participants from the farthest ends of

(Continued on page 6)

2nd Joint...

(from page 1)

...ty in Diabetic Patients by Mrs. Celeste C. Tanchoco, RND

V. New Horizon in Osteoporosis

- *Potential Clinical Application of Biochemical Markers of Bone Turn-Over* by Dr. Aw Tar Choon
- *Current and Future Treatment of Osteoporosis* by Dr. Mary Anne Lim-Abrahan
- *Rehabilitation for Osteoporotic Patient* by Dr. Ofelia L. Reyes

VI. Intervention in Diabetes: A Look in the Future

- *New Therapies in the Treatment of Diabetic Enteropathies* by Dr. Ramon E. Carpio
- *CHD Risk Reduction in Diabetes: The New Age of Therapy* by Dr. Rody G. Sy
- *Therapeutic Potential of Newer Insulin Secretagogue in the Treatment of Hyperglycemia (IGF-1, Amylin, GLP-1)* by Dr. James Harry Anderson, Jr., USA
- *Insulin Delivery Systems* by Dr. Laura Trajano-Acampado

The scientific program was prepared by the committee headed by Dr. Ruby T. Go (PSEM) and Dr. Rosa Allyn G. Sy (PDA). In charge of the exhibits and physical arrangements is Dr. Tommy Ty-Willing.

There will be breakfast, lunch and dinner satellite symposia sponsored by Bristol-Myers Squibb, Parke-Davis, Eli Lilly Philippines, Otsuka Pharmaceutical, and Bayer Philippines.

The Philippine Society of Endocrinology and Metabolism will hold its business meeting and investiture of successful candidates for diplomate in Endocrinology on the evening of December 9, 1997.

PDA...

(from page 5)

Negros Occidental. The module included dental care, foot care, heart care, men's and women's concerns, kidney care, eye care, and exercise.

Aside from these, a media campaign through newspapers, radio and television programs went on throughout the week.

Other activities of PDA-NOC include a regular monthly blood sugar testing and free clinics/lectures on diabetes management.

The Diabetes Awareness Week is an institutionalized activity in Bacolod City, backed by no less than a city council declaration embodied in a resolution lobbied for by the PDA-NOC in 1993.

This Sangguniang Panglunsod resolution sets aside a week in July to be celebrated by the entire city as Diabetes Awareness Week.

The celebration is always successful in galvanizing action and increasing public awareness about diabetes. It also proves that there is a steadily increasing number of people in the community who are suffering from, or are in danger of suffering from it.

It is humbling and at the same time challenging to realize that in this sugar bowl of the country, there is an ironically fast growing number of "sweet people" from whose bodies sugar overflows.

9th Intensive...

(from page 2)

Halili-Manabat, Dr. Roberto C.Mirasol, Dr. Elizabeth Paz-Pacheco, Dr. Josephine Carlos-Raboca, Dr. Tommy S. Ty Willing, Mrs. Susan B. Trinidad, R.N., Mrs. Ma. Imelda Q. Cardino, R.N.D., and Ms. Christine Fajardo, Exercise Physiologist.

The 10th Training Course is slated for June next year.

NEW CLASSIFICATION AND DIAGNOSTIC CRITERIA OF DIABETES MELLITUS

Edith I. Arceo-Dalisay, MD
UERMMMC

The classification and diagnosis of diabetes currently used in the Philippines was developed and published by the National Diabetes Data Group in 1979. In 1980 the WHO Expert Committee on Diabetes endorsed the report.

Due to increasing knowledge about diabetes, there was an international clamor for a review of the classification and diagnosis of diabetes. In the recent American Diabetes Association meeting (June 1997) in Boston, USA, the Joint ADA and WHO Expert Committee on Diabetes presented the result of 2 years' work and consultation with worldwide diabetes experts.

Diabetes Mellitus is a heterogenous syndrome that spans a broad clinical spectrum with hyperglycemia as the single defining feature. The heterogeneity of diabetes is seen in its classification and clinical manifestations. Hyperglycemia and its consequent glucotoxicity is responsible for the microvascular and macrovascular complications of diabetes.

Classification of Diabetes

Diabetes Mellitus was categorized into 5 distinct types by the National Diabetes and Data Group (NDDG): IDDM, NIDDM, Gestational Diabetes Mellitus, malnutrition-related diabetes and other types. In 1979, the category of impaired glucose tolerance (IGT), in which plasma glucose levels during an OGTT were above normal but below those defined as diabetes was added. The classification was based on a combination of clinical manifestations or treatment requirements and pathogenesis.

The new classification of diabetes is as follows:

I. Type 1 diabetes - B cell destruction, usually leading to absolute insulin deficiency.
   A. Immune mediated
   B. Idiopathic

II. Type 2 diabetes - may range from predominantly insulin resistance with relative insulin deficiency to a predominantly secretory defect with insulin resistance.

III. Other specific types: Genetic defects of B cell function, Genetic defects in insulin action, Diseases of the exocrine pancreas, Endocrinopathies, Drugs or chemical induced, Infections, Uncommon forms of immune-mediated diabetes, and Other genetic syndromes associated with diabetes

IV. Gestational diabetes mellitus

The new classification removed the terms IDDM and NIDDM because they are confusing --their use frequently resulted in patients being classified based on their therapy. The new classification is based on etiology. Malnutrition related diabetes (MRD) has been eliminated since evidence that diabetes can be directly caused by protein deficiency is not convincing. Fibrocalculous pancreatopathy (a subtype of MRD) has been reclassified as a disease of the exocrine pancreas. The category of impaired glucose tolerance has been removed --instead it was emphasized that it is a stage in the natural history of disordered carbohydrate metabolism. Impaired glucose tolerance is still an important risk factor for the development of type 2 diabetes.

The extent of the underlying disease process determines the degree of hyperglycemia. The severity of the metabolic abnormality can progress, regress or remain the same over a period of time.

Diagnostic Criteria for Diabetes Mellitus

The diagnostic criteria for diabetes mellitus have been modified from those previously recommended by the NDDG and the WHO. The revised criteria for the diagnosis is as follows:

1. Classifical symptoms of diabetes plus casual plasma glucose concentration $\geq$ 200 mg/dl (11.1 mmol/L). Casual being defined as any time of day without regard to time since last meal.

or

2. FPG $\geq$ 126 mg/dl (7.0 mmol/L). Fasting is defined as no intake for at least 8 hours.

or

3. 2HPG $\geq$ 200 mg/dl during an OGTT using a 75 gm glucose load.

Thus, there are three ways to diagnose diabetes and each must be confirmed on a subsequent day, by any one of the other methods.

The committee has recognized that a group exists with glucose levels that do not meet the criteria for diabetes, but are

(Continued on page 15)

Everything you always wanted to know about DIABETES...

(but were afraid to ask!)

Roberto C. Mirasol, MD
St. Luke's Medical Center

Drugs have been part of the treatment arm in the care of patients with diabetes. The other treatment options are diet and exercise. These have been the subject of previous issues of Diabetes Watch. In this issue, we will answer your questions regarding drugs, specifically new drugs that are available to you. This should serve as a guide to patients but you may have to consult your doctor before instituting any change in your treatment plan.

My doctor started me on drugs to lower my blood sugar. Are there other classes of drugs in diabetes?

There are generally two classes of drugs used in diabetes. These are drugs that increase insulin availability and drugs that decrease insulin requirements. The first includes insulin, insulin analogues (Lispro-insulin) and sulfonylureas. In the second group are acarbose, metformin and troglitazone.

Do they have side effects?

Side effects will depend on the drug that you use. Insulin and sulfonylureas may cause hypoglycemia and weight gain. Acarbose can produce gassiness, and metformin can have some gastrointestinal problems. If used properly, side effects may be lessened.

I am using metformin, how does it lower my blood sugar?

Metformin has been used extensively here for several years now but has been used in America for only two years. Metformin decreases insulin requirements by lowering excessive glucose production by the liver. Metformin lowers fasting plasma glucose by about 60 mg/dl. It is usually taken after a meal. It does not cause hypoglycemia or weight gain.

What about acarbose?

Acarbose decreases insulin requirements by decreasing the postprandial (after meal) rise in glucose. With acarbose, carbohydrates are absorbed and digested throughout the length of the small intestine instead of the proximal jejunum. This results in 40-60 mg/dl decrease in after meal sugars and a 20-30 mg/dl decrease in fasting plasma glucose. Acarbose should be taken after the first mouthful.

My doctor tells me that if my sugar will not go down, I will need insulin injections. Is this the only way I can control my sugars?

First, your doctor need to check whether your diet is okay.

(Continued on page 4)

INSULIN ANALOGUES: OPTIMIZING INSULIN THERAPY

Patricia B. Gatbonton, MD
Our Lady of Lourdes Hospital

Animal insulins first became available nearly 75 years ago. Since then, the technology of commercial insulins has evolved. Human insulin is now widely produced, using recombitant DNA technology. This progress directly parallels our increasing knowledge of the treatment in diabetes and its complications. The landmark study -- the Diabetes Control and Complications Trial (DCCT) -- has proven that tight metabolic control decreases complications of retinopathy, neuropathy and nephropathy.

With intensive insulin therapy however, more hypoglycemic episodes are observed. One of the reasons this happens is because current treatment regimens are unable to mimic normal pancreatic insulin secretion. Endogenous insulin levels increase rapidly in response to a meal, peak in one hour, and with plasma glucose, return to pre-meal values within 2 hours.

The majority of insulin-requiring patients use a combination of short-acting (regular) and basal (intermediate or long-acting) insulin.

Short-acting insulin is given before meals to counteract postprandial glucose rises. Available insulin preparations peak later (3-4 hours after injection) and remain elevated longer (duration of action 7-8 hours), because of

(Continued on page 11)

GLYCOSYLATED HEMOGLOBIN - INDICATION OF GLYCEMIC CONTROL

Joselynna S. Añel-Quimpo, MD, FPCP, FPSEM
St. Luke's Medical Center

Glycohemoglobin is produced by combining the glucose molecule with the hemoglobin.

Hemoglobin is the protein molecule in the red blood cell that binds oxygen and gives the red color of the blood. The red blood cells are produced by the bone marrow and have a lifespan of about 120 days (4 months). During the formation of the hemoglobin in the red cells, it is exposed to the glucose levels in the circulation. A certain percentage of this hemoglobin will bind with glucose and is called glycosylated hemoglobin or glycohemoglobin.

An excessive amount of glucose over a period of time would mean that a greater percentage of the newly formed hemoglobin will be glycosylated. This binding is irreversible and lasts for the whole lifetime of the red cell. This irreversibility of binding allows this product to be used for monitoring long-term control. It may also indicate a combination of hyperglycemic and hypoglycemic values.

The determination of the HbA1c helps to verify a patient's serial monitoring of blood glucose data (SMBG). However, it does not replace SMBG --the latter will provide the pattern that needs to be evaluated to decide which specific changes should be made in a patient's treatment regimen.

Limitation to the test

Certain conditions of the patient limit the use of this test as a monitoring standard of glycemic control. Pregnant women except those in their first trimester, who are diagnosed to be diabetic will need SMBG to determine their control. Glycohemoglobin levels for pregnants in different phases of gestation have not been standardized. Also, for diabetics with abnormal levels of total hemoglobin, this test is not reliable. This group includes those who may have anemia due to diabetic kidney disease, those who received blood transfusion, or those who have had blood loss.

The other limitation is in the interpretation of the results. In a survey done among laboratories in Metro Manila, several methods of assaying glycohemoglobin are used and each has its own normal range. The physician should inform the patients of these when a target range is jointly decided on.

In the Diabetes Control and Complication Trial for Type 1 Diabetes, a HbA1c level of less than 7% has been designated to mean good glycemic control. In countries where there is no standardized level, it has been advised that a target of less than 1% of normal of the laboratory be the target range.

The future of glycohemoglobin

The newer assays of HbA1c can produce results in rapid time (4-9 minutes) and the availability of this test, together with the SMBG during the patient's office visit, may significantly affect how glycemic control is interpreted and clinical decisions made.

It is also hoped that it will be more available to a greater number of diabetics when the cost of the assay can be made more affordable.

CARBOHYDRATE COUNTING AND YOU

Ma. Imelda Q. Cardino, RND
Diabetes Educational Clinic
Makati Medical Center

Controlling your diabetes is a challenge you must face daily. You eat and your blood glucose rises --but you exercise and with or without medication, you bring this level down to normal. You will notice though, that varied foods have varied effects on blood sugar elevation. Some food seem to raise this level more than others. So you ask yourself: Do I have to eat only the same kind of food, at the same amount day after day? The answer is no... you don't have to eat the same thing the same way, day after day.

Another question may come to mind. Is there a way I can predict my blood sugar response to certain foods? Yes -- there is a way of determining how high and how fast your blood sugar may go up. The key to this is carbohydrate counting. Why carbohydrate? Carbohydrate affects your blood sugar the most. Careful planning of what carbohydrate and how much of it to eat will help you identify which are your better selection options. You will need a home blood glucose monitoring device, a notebook to record your data, and a lot of patience. You will have to use the Food Exchange List for portion size and carbohydrate grams (Rice and Substitutes are reprinted here for your guidance).

RICE EXCHANGES:
1 exhange = 23 gms. Carbohydrate
1 exchange = 1/2 cup rice (well packed) or 1 rice substitutes

FOOD	MEASURE
1. Rice	1/2 cup packed
1.1 Rice Substitutes	
1. BREAD	
Loaf bread	2 sl. regular or 1 big
Pan de bonete or de leche	1 piece medium
Pan de limon or de monay	1 piece medium
Pan de sal	1 piece big or 2 small
Rolls (for hotdog or hamburger)	1 medium
2. CORN	
Binatog (no coconut)	1/2 cup
Corn on cob	1 medium 12 x 4 cm
Corn canned, whole kernels	1/2 cup
Greaseless Pop Corn	1 cup level cooked
3. ROOTCROPS	
Gabi (taro)	1 pc. 9 x 5 1/2 cm
Kamote (Sweet potato)	1 pc. 8 x 1/2 x 8 cm
Kamoteng kahoy (cassava)	1 pc. 6 x 5 cm
Patatas (potatoes)	1 pc. 9 x 5 cm
Tugi (spiny yam)	1 pc. 11 x 3 cm
Ube (yam)	1 1/4 or cubed
4. OTHER CEREALS (MILK NOT INCLUDED)	
Dry (flake and puff variety)	1 cup
Lugaw	1 cup
Oatmeal	1 cup
Cream or wheat	1 cup
5. BAKERY PRODUCTS	
Saltine	10 pcs.
Plain Soda crackers	8 pcs.
6. NOODLES, COOKED PLAIN	
Bijon, miki	1 cup
Macaroni	1 cup
Sotanghon	1 cup
Spaghetti	1 cup

It is best that you consult with a registered nutritionist-dietician to guide you. A session may last 45 to 90 minutes and you must agree to see her several times till you are used to counting your load of carbohydrate.

Just looking at the tables and the tabulation of food values is enough to confuse anyone... add to this the other food groups contributing carbohydrates (fruits, vegetables, milk) which have to be computed as well. This is one reason why you really will have to seek the help of a registered nutritionist-dietician for guidance. Once you get the feel of it, however, things will become easier. Happy counting!

Insulin...

(from page 8)

the tendency of human insulin molecules to self-associate.

This results in a relative hyperinsulinemia. This translates in clinical practice to a potential source of hypoglycemia, and necessitates the use of in-between meal snacks.

In an attempt to synchronize the insulin peak with the carbohydrate load, physicians have recommended that patients wait some 30 minutes after an injection before taking a meal. This is inconvenient for patients with busy lifestyles. Many patients are unable to comply and often inject just before meal. This further compromises the already less-than-ideal action profile of regular insulin.

The development of a molecule with the reduced ability to self-associate and an increased readiness to disassociate resulted in *insulin lispro*, an insulin analogue which has the amino acids, proline and lysine, normally at the B18 and B29 positions respectively, reversed. Like regular insulin, it forms hexamers in the presence of zinc but disassociates much faster. It has a more rapid onset and shorter duration of action. It may be mixed with NPH and ultralente insulin provided that it is immediately injected. When given to patients prior to a carbohydrate rich meal, insulin lispro achieved lower maximum blood glucose excursions and faster return to baseline values. Fewer episodes of hypoglycemia – including exercise induced hypoglycemia were observed during clinical trials. Information about its use in diabetic emergencies and in insulin drip solutions was not available from its manufacturer.

It is available in U-40 and U-100 concentrations in 10 ml vials and 1.5 ml cartridges. Insulin lispro is a therapeutic option that more closely approximates physiologic secretion with potentially beneficial effects on glycemic control, on the frequency of hypoglycemic episodes, on patient treatment-satisfaction and on rapid control of hyperglycemia. The development of an insulin analogue is another step toward optimum insulin therapy. Ask your doctor about it.

New Drug...

(from page 3)

form -- absorbable carbohydrates.

On the horizon is a new group of drugs - the insulin sensitizers. This type of blood sugar lowering drug is particularly interesting because of the fact that many people with diabetes do not lack insulin, but rather, possess mechanisms which make the insulin ineffective - the so-called 'insulin resistant state' of the liver, muscle, and fat tissues. An insulin sensitizer removes the barriers to the effects of insulin in these three tissues, now making the patient's own insulin effective in lowering the blood sugar.

Contrary to popular belief, the insulin sensitizers are not oral insulins. Contrary also to some quarters, no drug now or in the future can lower the blood sugar effectively without the patient adhering to a diet low in fats and free of refined sugars, plus regularly exercising. At the moment, blood sugar lowering drugs are expensive -- newer drugs will be even more expensive. However, diet programs and exercise regimens are inexpensive.

The blood sugar must be controlled at all times - research will continue to produce newer and more powerful drugs - but they will not come cheap. Therefore, the patient must still eat correctly and exercise regularly. Strict compliance to these will be an effective and cheaper way to prevent complications.

PANCREAS TRANSPLANTATION: IS IT FOR ALL TYPE 1 DIABETES?

Ma. Teresa P. Que, MD
National Kidney and Transplant Institute

Maria Cruz read the newspaper article with interest. It was about some people who complained that their relative's pancreas was removed and transferred to a 40-year old businessman with diabetes. This was done without the consent of any of the diseased person's next of kin. It was not so much the sensationalism of the case which caught her attention, but the possibility that the pancreas, the organ responsible for producing the hormone insulin, can actually be transplanted to another person to cure diabetes. No more insulin injections, no more hateful, painful finger-pricks for blood. Is it really possible?

Dr. Fernandez, the transplant surgeon, who also happens to be Maria's cousin, told her that in the Philippines, only 5 pancreas transplants have been performed, and all the recipients are not around today. But in centers abroad like the University of Minnesota, about 75 transplants are done every year. The International Pancreas Transplant Registry received reports of 4799 pancreas transplants done in different centers from December 16, 1966 to June 10, 1993. Transplanting a pancreas is no longer an experimental operation. Many patients receive a donor pancreas as a supplement to a kidney transplant. A pancreas transplant alone, performed early in the course of a patient's diabetes is seldom done in sophisticated centers abroad. In those who do, the success rates fall below the figures for simultaneous pancreas and kidney transplantation. Because of improvements in surgical technique and immunosuppressive therapy, the results of simultaneous pancreas and kidney transplantation have become comparable to other solid organ transplants. Is it for everybody?

Unfortunately, at this stage of the ballgame, the benefits of pancreas transplantation will have to be weighed against the possible risks of the procedure, and whether it is justifiable and appropriate in terms of cost and benefits for the patients. "A transplanted pancreas," says Dr. Paul Robertson, MD, director of the Diabetes Center at the University of Minnesota, "brings a person closer to normal blood glucose control than any other method. Many investigators report that a successful pancreas transplant results in normal glucose levels of glycohemoglobin A1C. Several research groups, in fact, have found that these improvements are maintained for several years: in some patients, blood glucose and hemoglobin A1C levels have remained normal for more than years."

There is another side to the coin. Immediately after the transplantation, the body's immune system tries to destroy the foreign organ -- a process called rejection. To stop rejection and protect the new organ, transplant patients take drugs to suppress the immune system. The most common immunosuppressive drugs are cyclosporine, prednisone, and azathioprine. Cyclosporine can have side significant effects on the kidney. It can also cause elevated blood pressure, nausea, hearing loss, acne, low white blood cell and

(Continued on page 14)

THE NON-INVASIVE GLUCOSE METER

Laura Trajano-Acampado, MD, FPCP, DPSEM
UP-PGH

I do emphathize with the diabetics. Having myself undergone regular self-monitoring of blood glucose during my first pregnancy when I had Gestational Diabetes Mellitus, I understand the pain and anxiety associated with having to prick your finger each time you need to monitor your blood sugar. Despite the improvements in the present-day finger prickers, the pain and anxiety still remain for after all, the act of pricking remains a prerequisite.

Wouldn't it be wonderful if the day came when we wouldn't have to prick our fingers anymore just to determine our blood sugar levels? That time may come, perhaps not very soon, but hopefully soon enough, with the development of the non-invasive (in laymen's terms, no pricking) glucose meters.

In the past several years, several companies in the U.S., Japan, and Germany have been trying to develop the technology for this. By shining a beam of near-infrared light through the skin, these meters can, and would soon be able to, accurately measure the amount of glucose in the bloodstream.

Three companies in the U.S. are getting closer to achieving their goals. BioControl Technologies, Inc. submitted its meter, the Diasensor 1000, to the U.S. FDA for final approval in January, 1994. Futrex will be submitting its meter, "The Dream Beam", to the FDA in the near future.

So how do these meters work? Here's how. Near-infrared spectroscopy involves wavelengths of light beyond those that people can actually see. When you place your finger into one of these non-invasive meters, a beam of light penetrates the skin and determines the amount of glucose in the blood. Wavelengths of light emitted by the meter are absorbed by the skin, glucose, and other substances. Each substance in the bloodstream and body has a unique optical signature, just as we have our own distinct way of signing our names. It is this optical signature that allows the non-invasive meter to identify glucose. After giving the wavelengths a few seconds to be absorbed, the meter counts up the number of optical signatures. Then with the help of an embedded mini-computer that performs a series of complicated statistical analyses, the meter calculates the blood glucose reading.

The development of the non-invasive glucose meter is fraught with problems, but researchers are trying their very best to get around these difficulties to produce the most accurate meters. But their job is not that easy. This is probably the reason why it took the FDA a long time to approve the Diasensor 1000 submitted by BioControl Technologies, Inc.

If the Diasensor 1000 is approved, it will be priced at (brace yourselves!) $7950! And it isn't exactly small. It is approximately the size of a small toaster oven (11 x 18.5 x 11 inches). The researchers and manufacturers hope that they will eventually be able to significantly decrease the size of the non-invasive glucose meter. It is also hoped that its price will go down as well.

(Continued on page 15)

Pancreas...

(from page 12)

platelet counts. Prednisone can cause stomach upset, stomach or duodenal ulcers, brittle bones; and azathioprine can induce nausea, fatigue and fever. Immunosuppressives also lower the body's defense against infections. Newer immunosuppressives are FK506 and Cell Cept. Despite immunosuppressive drugs, some transplanted organs are still rejected, and the failure rate of pancreas transplants is higher than that of kidney transplants. When a transplanted pancreas fails, a person goes back to insulin injections.

Because of these considerations, pancreas transplantation is not for all diabetic patients. Simultaneous pancreas-kidney transplantation is offered to insulin dependent diabetics between 18-55 years of age with renal failure due to diabetes. A pancreas transplant alone is considered as an option for patients whose diabetes is so brittle that it interferes with a person's normal function. Patients unlikely to be acceptable candidates for pancreas or kidney transplant include those with coronary artery disease, cancer, poor lung function, ongoing alcohol or drug abuse, major psychiatric illness and active infection. The procedure is also expensive. In the U.S., pancreas transplantation can cost anywhere from $40,000.00 to $100,000.00 depending on whether a kidney is transplanted at the same time. The annual cost of immunosuppressive drug runs to more than $3,000.00.

"Thank you for this magazine, Mrs. Urbano," Maria told her diabetes nurse educator. She looked at the magazine with interest. In response to her queries, Mrs. Urbano had lent her a copy of the American Diabetes Association's informative magazine Diabetes Forecast, June 1996 issue. She hurried home and read about Marie Verrastro, an American woman who received a pancreas and kidney transplant at the University of Cincinnati Hospital in 1993. Her transplant operation was done only two months after she started *hemodialysis* (a procedure where patients with kidney failure are hooked up to a machine through which the patient's blood flows and is cleansed of impurities). When Verrastro was wheeled into intensive care after surgery, she had three kidneys and two pancreas. (Her own kidneys and pancreas were not removed.) Her recovery was initially smooth but later had several rejection episodes at the hospital and even after she had returned home. For the rejection episodes, she was given OKT3, an immunosuppressive drug that specifically targets the body's immune system attack on the new organ. With each episode she had to return to the hospital for 14 days of intensive treatment with heavy duty drugs. After a few months, Marie's health improved. She now attends transplant clinic six times a year for blood tests that will tell her doctors if she's headed for another rejection.

Patients who have had a pancreas transplant experience an improved quality of life. Effects on long term complications, however, is an issue which still has to be resolved. Many reports attest to the improvement of peripheral neuropathy. Muscles and nerves work better and get stronger. Reports from different centers show that recurrence of nephropathy in the new kidney is prevented if a pancreas is transplanted at the same time. It may even halt the progression of nephropathy in previously transplanted kidneys (pancreas after kidney transplant). In contrast to the encouraging reports on neuropathy and nephropathy, reports from the University of Minnesota show that pancreas transplantation fail to reverse or to halt the progression of diabetic retinopathy.

I'm glad that I read all about this, Maria told herself. My diabetes is only two years old and I have every opportunity to adhere to my diet regimen, exercise, and insulin injections. Until technology reduces the risks of pancreas transplantation or finds a cure for diabetes, then I will just have to recruit all the support I can get to help me live a well balanced and controlled life. She tossed the magazine to the floor and turned off her bedroom light. She told herself before she dozed off, "One of the things I will do is get a subscription to this magazine, and mail my request form first thing in the morning."

New Classification...

(from page 7)

nevertheless too high to be considered altogether normal. This group is defined as having FPG levels ≥ 110 mg/dl but < 126 mg/dl or 2-h values in the OGTT of ≥ 140 mg/dl but < 200mg/dl. Normal glucose values are FPG < 110mg/dl and 2hPG < 140 mg/dl.

The cut point for 2hPG of 200 mg/dl is because it is at this level that the prevalence of microvascular complications increases dramatically. However, the cutpoint of FPG ≥ 140 mg/dl defined a greater degree of hyperglycemia. The expert committee felt that the cutpoint values for both tests should reflect a similar degree of hyperglycemia and risk of adverse outcomes. Thus, changing the diagnostic criteria for the FPG from 140 mg/dl to 126 mg/dl is based on the belief that the cutpoints for the FPG and 2h PG should diagnose similar conditions.

Of the 3 methods for diagnosing diabetes, the FPG is preferred because it is simple, reproducible and easier to perform.

The ADA did not revise the criteria for diagnosing GDM using the Mahan O' Sullivan. This involves a screening test consisting of a 50 g oral glucose load followed by a plasma glucose determination 1 h later. A value of ≥ 140 mg/dl 1 h after the 50-g load indicates the need for a full diagnostic 100 gm, 3-h OGTT performed in the fasting state.

The combination of any 2 of the following values gives you a diagnosis of GDM: F = 105 mg/dl, 1-h = 190 mg/dl, 2-h = 165 mg/dl and 3-h = 145 mg/dl.

On the other hand, the WHO also recommends the method being used by ASGODIP in diagnosing GDM. This makes use of a 75 gm glucose load after fasting. A 2h PG value of 140 mg/dl is diagnostic of GDM.

The diagnostic criteria has been simplified in the hope of identifying more patients who are diabetic, so that we may be able to diagnose diabetes in it's early stages and ultimately be able to prevent its complications.

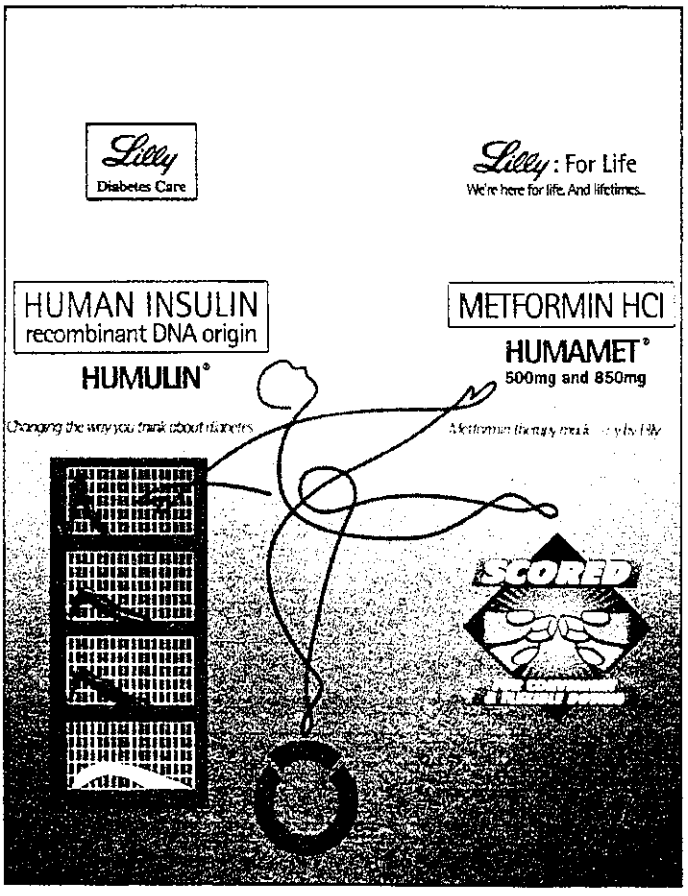
The Non-Invasive...

(from page 13)

Boehringer Mannheim is currently developing another non-invasive blood glucose monitoring device called the SpectRx. The device sits on a counter top and is 8 inches wide, 12 inches deep, and 8 inches high. The person being screened rests his or her head against the device and looks into the instrument. A result is ready is ready in 20 seconds with minimal involvement from the patient being screened. The device takes readings from the lens of the eye. Low intensity, eye safe, visible blue light is used in the test. The device still needs to undergo a lot of testing as to its accuracy and acceptability. And like the Diasensor 1000, aside from its size, a major deterrent for its widespread use will be its price. Its estimated cost is between $5,000 to $10,000.

It would definitely be a dream come true for many diabetic patients when the non-invasive glucose meter will finally become available. Hopefully, the non-invasive meter of the future will have the following features - small and handy, very accurate and of course, affordable.

Diabetics will be able to express a sigh of relief when these meters become available to the general public. They will be able to say goodbye to finger pricking forever. We hope this will encourage diabetic patients to monitor their blood sugars more frequently, ultimately resulting in better blood sugar control and fewer diabetic complications. It is because of these welcome train of events that we look forward to the coming of age of the non-invasive glucose meter!



EDITORIAL COMMENT

This issue is a preview of what is new in the field of diabetes. Clinicians and researchers continually studying the various aspects of diabetes provide us with more information than many physicians in private practice can keep up with.

The new classification for the diagnosis of diabetes will affect not only physicians, but the population in general. Many potential diabetics are out there, and many more would be diagnosed than would have been with previous criteria.

A new, soon to be available insulin sensitizer and an insulin analogue will widen our armamentarium in the fight against diabetes.

We also reviewed the progress on pancreatic transplantation -- it seems that the hope for a cure is still in the unforeseeable future, and is apparently not for everyone.

The use of the more rapid glycosylated hemoglobin testing coupled with non-invasive blood glucose monitoring during the patient's office visit will enable care-givers to assess glycemic control with minimum patient inconvenience.

Our president, Dr. Lina Lantion-Ang, aptly pointed out that as we struggle to keep up with what is new, we must not neglect the preventive regimens - tried and tested - already available to us which have improved the quality of life of our patients. We owe it to them.

13th PDA WORKSHOP

Unlike in the previous years when only 2 diabetes workshops were organized per year in cooperation with the different PDA chapters, this year, the PDA (national) hosted the 3rd diabetes workshop at the Century Park Hotel in Manila from October 3 to October 5, 1997. The 13th diabetes workshop focused on "DIABETES CARE: MEETING THE CHALLENGE". It was a very well attended workshop, that once again helped 206 physicians and 6 para-medical professionals acquire a load of expertise that will make them more proficient in the care of patients with diabetes mellitus.

Philippine Diabetes Association, Inc.

Unit 25, Facilities Centre
548 Shaw Boulevard
Mandaluyong City
1501 Philippines
Tel./Fax No. (632) 531-1278
Infopage No.1277-94661

DiabetesWatch
A publication of the Philippine Diabetes Association, Inc.

Editor-in-Chief, Emeritus
Augusto D. Litonjua, M.D.
Editors
Rosa Allyn G. Sy, M.D.
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Allan Hernandez, M.D.

The Lighter Side of Diabetes

by Dr. Allan Hernandez