



Member, International Committee of Diabetes Magazines, International Diabetes Federation

# DiabetesW

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

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In 1996, the Philippine Center for Diabetes Education Foundation, Inc. (The Diabetes Center), refocused its mission and vision of upgrading diabetes care through education not only of type 2 diabetics, but also of type 1 diabetics—particularly children and adolescents. In the present era of evidence-based medicine, researches to collect and collate data applicable to our culture and people, especially children with diabetes, are necessary to improve diabetes care. To fulfill this vision, since data on childhood diabetes in our country is scarce, the Diabetes Center organized the Working Group for the Study of

## PREVALENCE OF TYPE 1 DIABETES MELLITUS IN CHILDHOOD AND ADOLESCENCE IN METRO MANILA, PHILIPPINES

*The Working Group for the Study of Childhood  
Diabetes from the Philippine Center for Diabetes Education  
Foundation, Inc. (The Diabetes Center)*

Rosa Allyn G. Sy, MD  
Cardinal Santos Medical Center

Childhood Diabetes. This group is composed of three (3) pediatric endocrinologists, six (6) adult endocrinologists and one (1) nurse educator. The members are Siok Suan Cua, MD, Gigi Crisostomo, MD, Carmelita F. Domingo, MD, Lina Lantion-Ang, MD, Mary Anne Lim-Abraham, MD, Augusto D. Litonjua, MD, Elizabeth Paz-Pacheco, MD, Rosa Allyn G. Sy, MD, Tommy Ty-Willing, MD, & Mrs. Susan

Trinidad, RN.

The group's first project—the most basic but the most important in terms of data which will serve as the foundation of other succeeding researches—is the study on the PREVALENCE as well as the INCIDENCE of Type 1 DM in childhood and adolescence in Metro Manila. The general objective of the study was to establish a registry of type 1 diabetes in childhood and adolescence aged 0 –14 years in Metro Manila. The specific objectives of the study were to: 1) determine the prevalence of type 1 diabetes in childhood and adolescence by calculating the

*(Continued to page 4)*

## GENE THERAPY TYPE 2 DIABETES: Is it for Real?

A novel treatment for type 2 Diabetes Mellitus is gaining a lot of attention. This is being considered as the answer for the 21<sup>st</sup> century, but does gene therapy exist only in the laboratory or will it soon be available for use by people with diabetes?

The genetics of a disease is quite complex. The human genome consists of approximately 3 billion base pairs of deoxyribonucleic acid or DNA and is estimated to contain 30,000 to 100,000 genes. Each individual inherits one copy of the genome from each parent. In the cell, the DNA is packaged as 23 pairs of

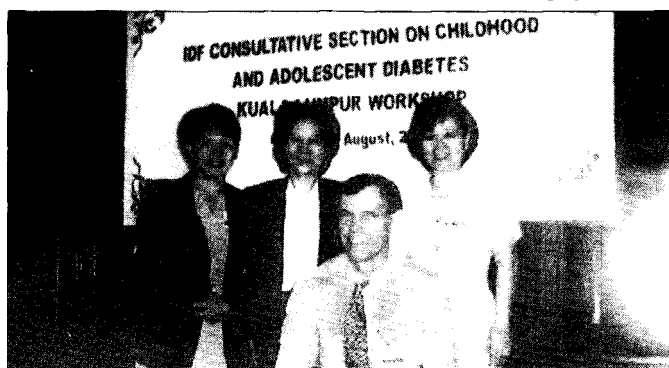
*(Continued to page 6)*

## *Dream Come True...* IDF ADOPT A CHILD WITH DIABETES PROGRAM

International Diabetes Federation (IDF) members come together to work for a common goal: that is to improve the lives of all diabetics by upgrading diabetes care. Together everything is possible, together we are stronger.... Ms.

Maria de Alva, IDF president 1997 -2000, dreamed of uplifting the lives of indigent diabetic children from developing countries through the concept of sponsorship. Her proposal was brought to the IDF executive

*(Continued to page 6)*



## Philippine Diabetes Association 2000 Convention

The Philippine Diabetes Association Annual Convention will be held from December 5-6, 2000 at the Century Park Hotel, Manila. The scientific program includes the latest updates on treatment strategies for both Type 1 and Type 2 Diabetes, special issues on DM and pregnancy, the latest clinical trials and micro and macrovascular complications of diabetes.

This meeting will surely be an educational way to end this millennium year.



Lina C. Lantion-Ang, MD  
PDA, President

## DIABETES MELLITUS Visions.....Realities

The triumvirate characters in the world of diabetes are the patient, the healing team and the disease. Each with a vision...Each with realities to be experienced.

The PATIENT envisions a better quality of life but he has

to experience patient empowerment (a shared responsibility) through self discipline, self monitoring of his blood sugar, compliance with a healthy diet and staying physically active most of the time. A good diabetes education

and support from the healing team remains a formidable foundation of patient empowerment.

The HEALING TEAM envisions a miracle cure for the diabetic patient during his lifetime. They are patiently involved in a concerted effort along the pathways of Diabetes Research, Education and Service. This has led to the novel concepts of diabetes (Zimmet), prandial blood glucose regulation, insights into the genetics of Diabetes Mellitus, newer antidiabetic agents, insulin analogues and clinical applications of diabetes research outcomes. We laud the commitments and dedication of the various diabetes teams around the world who continue to provide updated Knowledge on Diabetes Mellitus to diabetic patients and their families.

What do we envision for the DISEASE? A Diabetes-Free

World!

Regions around the world have come up with Diabetes Declarations Against Diabetes (St. Vincents, the Americans, the Western Pacific, the Philippines).

Programs on Diabetes awareness, prevention, research, education and service have linked organizations, governments and people together aiming high for a "diabetes-free" world. The task is tedious. It may take a life time commitment...but it is there...and it is a beautiful beginning!

As we bid good-bye to another year of the new millenium, we are gladdened by the coming of the HOLY CHILD who is the hope of all peoples of the world...diabetics and non-diabetics alike. **Merry Christmas and a Happy New Year to all!**

*In NIDDM  
Management*

**FORNIDD**

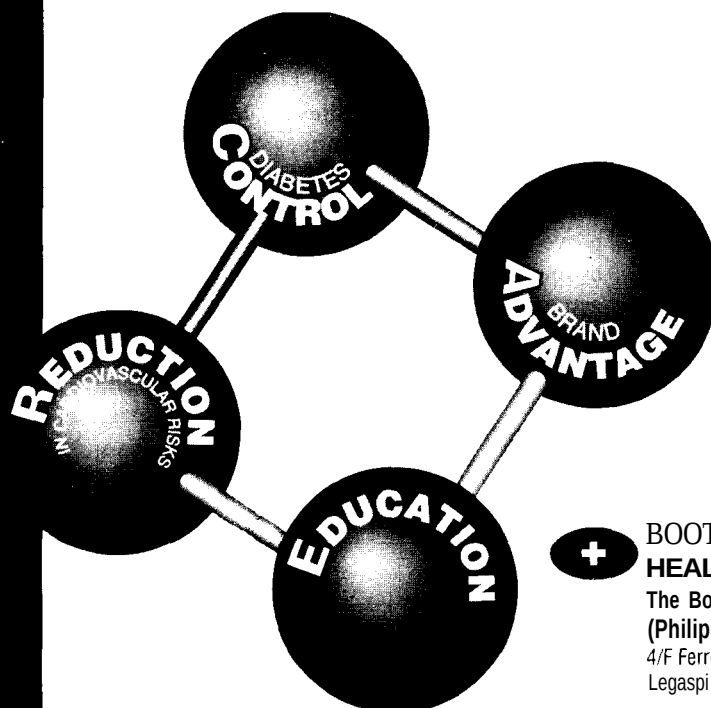
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## MEANDERINGS...



### DIABETIC NEPHROPATHY- NEW HOPE?

Augusto D. Litonjua, MD, Editor Emeritus

One of the dreaded complications of diabetes mellitus is the failure of the kidneys to function. The kidneys are a vital organ--without them, we die. Because, the waste products generated by the various metabolic processes in the body cannot be removed. We succumb to our own poisons.

How the kidneys are involved in diabetes mellitus occurs in various stages--there is a point at which we can arrest

the progression of kidney failure.

The earliest change that is seen in the clinics is the enlargement of the kidneys and their excretory function is magnified. This is expressed as an above the normal 'creatinine clear-ance.'

Later, the sizes of the kidneys return to normal and all laboratory tests pertinent to the kidneys normalize.

The third phase is a very important stage in the progression of kidney damage--the so-called 'microalbuminuric stage.' Minute amounts of protein find their way into the urine. This can be detected in the clinics nowadays. It is important to do so, because this is a reversible stage--whereby,

strict control of the blood sugar and blood pressure, plus restriction of salt intake and the administration of a drug of the class, ACE inhibitors, can normalize kidney function.

If the disease progresses, then patients enter into the irreversible stages of kidney function deterioration--the 'macroalbuminuric stage' where large amounts of protein are now detectable by routine urinalysis. Kidney failure becomes inevitable, although the process can still be slowed down.

At the recent Central European Vascular Forum held in Rome this September, a new drug that may aid in the prevention and treatment of diabetic nephropathy was

reported. In the 4 months that this drug was used in Type 1 and in Type 2 patients, there was a significant improvement in the protein excretion in both the micro- and the macro-albuminuric stages. The investigators feel that the effect of this new drug is a 'true and persistent amelioration of albuminuria.' Of course, in medicine, only time eventually can tell whether the initial responses of patients to new drugs will be borne out in the end.

While control of the metabolic disturbances is the central aspect of the prevention of diabetic nephropathy, this control is many times difficult and sometimes dangerous. Thus, the search for new approaches to the prevention and treatment of this complication of diabetes mellitus is warranted. For the moment, however, we must strictly control the blood sugar and blood pressure levels of our patients--this is the time honored and time tested approach.

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## DiabetesWatch

### Prevalence...

(From page 1)

hospital recording rate and 2) to describe the demographic characteristics of diabetic children and adolescents less than 14 years of age when first diagnosed with the disease.

This is a pilot study limited to children of Metro Manila aged 0-14 years old, regardless of their social class who are diagnosed clinically (presenting as DKA, weight loss, vomiting, behavioral change, polyuria, polydipsia etc) to have type 1 DM and are receiving insulin for glycemic control. Subjects included in the study are patients of physicians who are members of the Philippine Pediatric Society; of diabetologists and endocrinologists who are members of the Philippine Pediatric Society of Metabolism and Endocrinology, of the Philippine Diabetes Association and Philippine Society of

Endocrinology and Metabolism practicing in the four districts of Metro Manila from January 01, 1998 to June 30, 1999. Patients requiring insulin due to secondary diabetes (steroid-induced etc.) are excluded from this study. Patients were identified by reviewing all hospital as well as clinic records from the four districts of Metro Manila by 2 designated research assistants. To ensure that the four districts of Metro Manila were equally represented, all doctors were classified according to the district where they practice.

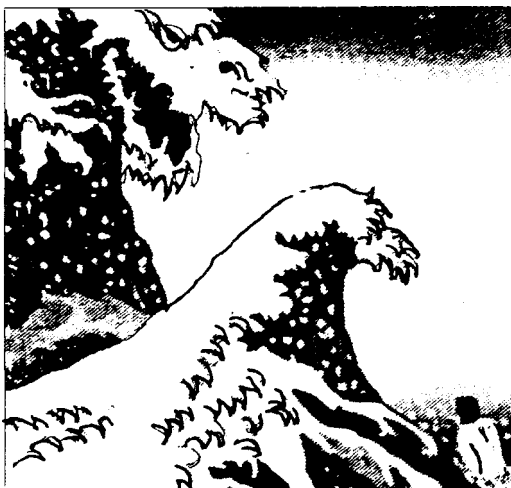
This study which covered a period of one and half years, from January 01, 1998 to June 30, 1999, identified a total of 72 type 1 diabetics between age 0 – 14 years, 51 (71%) girls and 21 (29%) boys. Fourteen (14) new cases were identified from January 01, 1998 to December 31, 1998 while 7 new cases were identified from January 01, 1999 to June 30, 1999.

Using the hospital recording rate which is defined as the number of cases of a given diagnosis per time period entered in a hospital/clinic record divided by the populations of the hospital catchment area, the prevalence of type 1 diabetes in children in 1998 is 1.1 per 100,000 while the prevalence from January 01, 1999 to June 30, 1999 is 2.08 per 100,000. The incidence of type 1 diabetes in children aged 0 – 14 years in our country in 1998 is 0.41 per 100,000 population. Our study showed a significantly much lower incidence rate of type 1 diabetes in children aged 0-14 years as compared to South Korea which has an incidence of 0.7 per 100,000 and in Japan 2 per 100,000.

The youngest subject at the time of diagnosis included in the study is 2 years of age and the oldest is 14 years old. All of the subjects (72/72) presented with diabetic keto-

acidosis (DKA), 29/72 presented with a history of polyuria, 27/72 polydipsia, 27/72 with weight loss, 9/72 vomiting, 8/72 nausea, 8/72 abdominal pain, 2/72 difficulty of breathing and 1/72 with behavioral changes. Other clinically significant findings at the time of diagnosis are upper respiratory tract infections, urinary tract infection and vulvar pruritus.

This is the first data available for type 1 diabetes in children in our country to date. This study was made possible through the full support and educational grant from the Philippine Center for the Diabetes Education Foundation Inc. and the cooperation of all the different physicians and organizations who shared their records with our research assistants during the survey. This study also received support from the Philippine Diabetes Association and Novo-Nordisk, Philippines.



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Dosage and administration:

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**71%  
REDUCTION  
OF HEART  
ATTACK**

It's that time of the year again — Diabetes Awareness Week from July 23-29 — and this year we are urging everyone to come together behind the campaign to ensure that all Filipinos diabetics will know more about diabetes, its health risks and how to prevent it.

Diabetes is increasing at an alarming rate not only in our country, but in the whole world, and now is the time to control its occurrence through education, promotion of awareness and healthy

lifestyle.

This year, the poster features "Pledge for Diabetes" where all the concerned groups gathered together to show that there is strength in unity.

Last July 21, the Diabetes Center brought the Philippine Diabetes Association, the Department of Health, the

## Diabetes Awareness Week 2000: "If we hold on together ..."

Susan B. Trinidad, Head Nurse Educator  
Diabetes Educational Clinic, Makati Medical Center

different Medical Associations and the pharmaceutical companies involved in Diabetes Care, together to sign the "Manila Declaration: Five-Point Principles of Diabetes Care." This is to demonstrate their determination and willingness to rally resources for the prevention of diabetes and its

complications.

The big leap towards unity was inspired by the initiatives of the people behind the St. Vincent's Declaration in Italy.

The summary of action from the meeting in 1988 (which was attended by the International Diabetes Federation, WHO and pharmaceutical industry representatives) was target-oriented and remains the focus of effort and action in diabetes care.

In 1999, the Western  
(Continued to page 7)



**We pledge**

**support for the diabetic patient  
Awareness Week 2000  
23 July 2000**

## DiabetesWatch

### Gene therapy...

(From page 1)

chromosomes.

The human genome is unique so that the DNA of each individual (except identical twins) varies in millions of ways from the DNA of another. The vast majority of variations in DNA presumably have little or no effect on the individual. However, certain variations do affect disease susceptibility, often through interaction with non-genetic factors. This type of genetic variability contributes to the etiology and pathogenesis of many diseases including diabetes.

Advances in molecular genetics have enabled the identification of so-called susceptibility genes in type 2 diabetes. Different forms of these genes interact with each other and environmental factors

to cause this illness. Understanding the functions of these susceptibility genes will lead to the identification of drug targets and the discovery of improved treatment and prevention strategies. Gene therapy such as alteration of the genetic make-up, as performed in genetic engineering, may prevent the occurrence of diabetes in high risk individuals. The completion of the human genome project should make the search quicker and therefore further the importance of gene-based approaches.

These prospects certainly sound very exciting. More research work is needed until these studies reach human clinical trials. Moral and ethical issues, as to whether we should be manipulating our genes, would surely attract a lot of discussion.

### Dream come true...

(From page 1)

board twice (1997 & 1999) and to the IDF WPR Council in 1999. In October 1999, the IDF executive board approved the program proposed by President de Alva and assigned this noble project to the section on the childhood and adolescent diabetes under the leadership of Professor Martin Silink. The development of this international program is not an easy task. It took the section on childhood and adolescent diabetes several months to conceptualize this program. By corresponding with the different national diabetic associations, (professional and lay groups), diabetic centers in recipient countries, and ISPAD together with World Vision, HOPE worldwide, and Diabetes Australia the concept of IDF ADOPT A CHILD WITH DIABETES PROGRAM came to fruition. The concept of this program is for comprehensive care over 5 to 10 years through

local centers who will be directly responsible to the IDF and local diabetes association. During the phase of concept development, the Philippines (Manila) was included as one of the pilot sites.

Dr. Graham Ogle of Australia was requested by the section to help in the implementation of this international program which aims to support indigent diabetic children by providing insulin, insulin syringes, glucose testing meters HBA1c measurement, clinical care and education. Health outcome data, in turn will have to be reported to IDF annually.

From August 16 -19, 2000, Dr. Rosa Allyn G. Sy together with Dr. Siok Suan Cua and Dr. Elizabeth Ann Fernando met with the IDF section on Childhood and Adolescent diabetes and Dr. Graham Ogle in Kuala Lumpur, Malaysia for the finalization of the program. This program is to be started early next year.

human insulin  
DNA origin

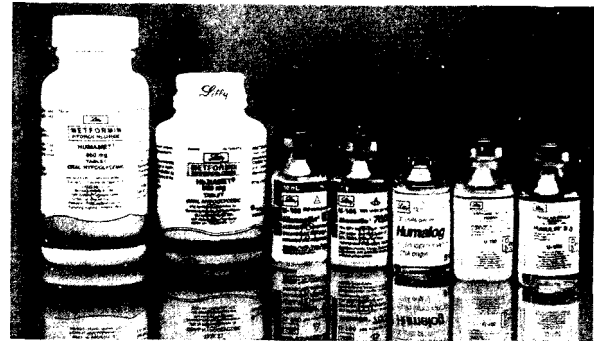
**Humulin**

nun HC

**Humamet**

insulin lispro  
(rDNA origin)

**Humalog**

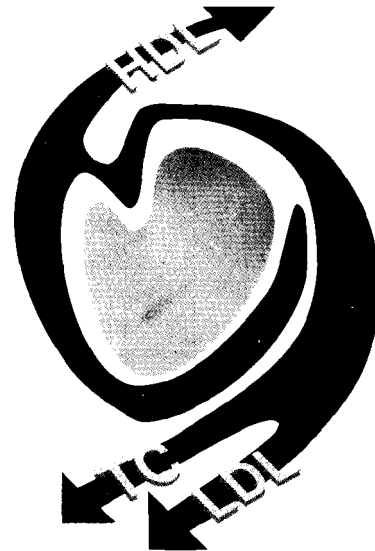


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## Diabetes Awareness...

(From page 5)

Pacific Region of the International Diabetes Federation (IDF) initiated an alliance of strategic partners to fight against the ravages of Diabetes in the region. Representatives from Ministries of Health, National Diabetes Associations, National Health Institutions, WHO collaborating centers, international agencies and pharmaceutical companies endorsed and signed a declaration as a commitment to conquer the rapidly spreading disease.

As we follow with the Manila Declaration, several associations/organizations and pharmaceutical companies have shown their support in our call for unity and these are:

1. Philippine Diabetes Association

2. Department of Health
3. Consortium of Government Diabetes Clinics
4. Institute for the Study of Diabetes Foundation, Inc.
5. Food and Nutrition Research Institute
6. DIACARE
7. East Binondo Volunteer Fire Brigade
8. Lions Club International District 301-A2
9. Nutritionist-Dietitian Association of the Philippines
10. Makati Medical Center
11. Philippine Academy of Ophthalmology
12. Philippine Association for the Study of Obesity & Overweight
13. Philippine Heart Association
14. Philippine Lipid Society
15. Philippine Society of Endocrinology & Metabolism
16. Philippine Society of Hypertension
17. Philippine Society of Nephrology
18. Philippine Neurological Association
19. Philippine Obstetrics & Gynecological Society
20. Philippine Society of Vascular Surgeon
21. Philippine Pediatric Society of Metabolism & Endocrinology
22. San Pablo City Emerald Lions Club
23. San Pablo City (Hosts) Lions Club
24. Abbott Lab.
25. Aventis
26. Bayer Phils., Inc.
27. Becton Dickinson
28. Boie Takeda Chem., Phils.
29. Boots Healthcare
30. Eli Lilly (Phils.) Inc.
31. Johnson & Johnson Medical Phils.
32. Knoll Phils., Inc.
33. Mead Johnson
34. Merck, Inc.
35. Merck, Sharp & Dohme Phils.
36. Nestle Phils. Nutrition
37. New Pfizer
38. Novartis
39. Novo Nordisk Pharmaceuticals (Phils.), Inc.
40. Otsuka Pharmaceuticals Co.
41. Pharmacia & Upjohn, Inc.
42. Roche Phils. Inc.
43. Servier
44. Smithkline Beecham
45. Tcrumo
46. Therapharma
47. Zuellig Pharma Corp.

Management Clinic livened up the morning with aerobic exercises participated in by the audience.

The Holy Mass followed, giving spiritual strength to all the participants.

Other activities included in both venues were the "Pera o Bayong" contest participated in by various groups and an On-the-Spot Painting Contest, a treat to all the artistic diabetics, sponsored by Lifescan, Inc.

Maribeth Bichara, a well-known choreographer, graciously accepted our invitation for the second time. For this year's program, we had our very own Mrs. Amelita M. Ramos, Chair of the Diabetes Center and Dra. Desiree Narvaez from the Department of Health as our guest speakers.

Highlighting the day's activities was the very inspiring talk of a great singer, Mr. Gary Valenciano, who is himself a diabetic. The insights of people who have lived with and coped with diabetes for many years are helpful because they fight the battle daily.

An eye-catching figure graced the occasion, too. Ms. Ara Mina rendered two songs and Ms. Klaudia Koronel danced gracefully at Festival Mall, Alabang. Both personalities were sponsored by Mr. Wilson Tieng.

For the week-long activities, all participating hospitals gave lectures to parents and teachers regarding type 1 diabetes awareness and promotion of a healthy lifestyle. Brochures on type 1 diabetes prepared by the Working Group on Childhood Diabetes in cooperation with Roche diagnostics and Eli Lilly were distributed.

As the song goes, "If we hold on together. I know our dreams will never die...." Dreaming big like having a CURE for diabetes will always be in our minds. But making the burden a little lighter could be another way of helping our people.

Let's all join hands to make life a little easier for the diabetics.

## Kitchen Corner!

### GRILLED SHRIMP WITH PASTA AND PINEAPPLE SALSA

*This is a light, refreshing main course with a tang of citrus.*

- |                                 |       |                                     |
|---------------------------------|-------|-------------------------------------|
| 6 Servings/Serving Size:        | 1     | large red pepper,                   |
| 3 oz shrimp with 1 cup of pasta |       | chopped                             |
|                                 | 1     | large red onion,                    |
|                                 |       | chopped                             |
| Exchanges:                      | 1     | jalapeno pepper, minced             |
| 3 1/2 Starch                    | 1/2   | cup orange juice                    |
| 3 Very Lean Meat                | 1/3   | cup lime juice                      |
| Calories . . . . .              | 1 1/2 | lb peeled and deveined large shrimp |
| Calories from Fat . . . . .     | 6     | cups cooked rotini pasta            |
| Total Fat . . . . .             |       |                                     |
| Saturated Fat . . . . .         |       |                                     |
| Cholesterol . . . . .           |       |                                     |
| Sodium . . . . .                |       |                                     |
| Carbohydrate . . . . .          |       |                                     |
| Dietary Fiber . . . . .         |       |                                     |
| Sugars . . . . .                |       |                                     |
| Protein . . . . .               |       |                                     |
- 2 15-oz can pineapple chunks, packed in their own juice, drained

1. In a large bowl, combine all salsa ingredients except the shrimp and pasta. Prepare an outside grill with an oiled rack set 4 inches above the heat source. On a gas grill, set the heat to high.

2. Grill the shrimp on each side for 2 minutes. Toss the pasta with the salsa, arrange the shrimp on top, and serve.

A presscon, anchored by Ms. Gel Santos-Relos and Ms. Ida Bernasconi followed the signing. Dr. Augusto D. Litonjua led the panelists together with Drs. Mary Anne Lim-Abraham, Ruby Go, Josephine Carlos-Raboca and Cynthia Halili-Manabat.

Because our membership is increasing, the kick-off activities were conducted simultaneously at two big shopping malls--one in Glorietta and at the Festival Mall in Alabang. Both venues were jam-packed with people. Diabetics from all walks of life trooped to malls concerned about the debilitating effects of this disease.

To keep the spirit alive, a group of physical therapists from Thermogenesis Weight

## DiabetesWatch

The care and treatment of Diabetes Mellitus extends beyond monitoring of blood glucose control. It aims to prevent the onset of microvascular complications, and for other patients, prevent the progression of the disease process. Patients and their medical caregivers (endocrinologists, diabetes-specialists, nurse educators, dietician/nutritionists and other support units) should work hand-in-hand in this endeavor. Landmark studies in both type 1 and type 2 Diabetes (DCCT, UKPDS, Kumamoto studies, etc) have provided data for the management of diabetes. This data is the basis for recommendations regarding the prevention of microvascular complications which include Diabetic Retinopathy, Nephropathy and Neuropathy.

The following is the recommended schedule for the screening and follow-up of

## Diabetes Microvascular Complications Screening: When, What and How often

Joselynna S. Anel-Quimpo, MD  
St. Luke's Medical Center

these complications:

### *Diabetic Retinopathy*

Initial dilated and comprehensive eye examination by an ophthalmologist for type 1 diabetics is advised 3-5 years after diagnosis and yearly thereafter. Children, who have reached puberty even if the duration of diabetes is less than 5 years, are also advised to have the eye examination.

Type 2 diabetics should have an eye examination at the time of diagnosis because the disease process is presumed to have been present for a period of time prior to diagnosis. Annual follow-up exam is indicated if no retinal abnormalities are found or if minimal nonproliferative dia-

betic retinopathy is present.

Diabetic patients with mild to moderate proliferative retinopathy or suspicion of macular edema should receive immediate referral to a retinal specialist regardless of the time of diagnosis. In patients with poor glycemic control or gross proteinuria it is imperative to follow up their eye examination more closely or at least annually for they are at higher risk for onset and progression of retinopathy.

Women with preexisting diabetes, when planning for pregnancy or are pregnant should have a comprehensive eye examination. This is preferably done during the first trimester with close follow-up

throughout pregnancy. The hormonal changes and demands of pregnancy have been shown to aggravate the retinopathy of the diabetic woman.

### *Diabetic Nephropathy*

The appearance of low but abnormal levels ( $>30$  mg/day or  $20\mu\text{g}/\text{min}$ ) of albumin in the urine signals the earliest clinical evidence of nephropathy in the diabetic. This is the stage where treatment can still reverse the disease process, thus it is imperative that screening be performed. Because microalbuminuria rarely occurs with new onset type 1 diabetes or before puberty, screening should begin with puberty and after 5 years from diagnosis.

In type 2 diabetes, again due to the difficulty in dating the onset of the disease process, screening should be done at the time of diagnosis.

Routine urinalysis is done

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Delays the carbohydrates' rate of absorption

Reduces the postprandial blood glucose peaks

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## Microvascular...

(From page 8)

first and any infection is treated before testing for albuminuria. When the dipstick method shows negative albumin protein, then microalbuminuria testing is done. If the dipstick test is positive, it indicates gross or macroalbuminuria. If the patient tested positive for microalbuminuria, another assay is done 3-6 months later to confirm the presence of nephropathy. After making the diagnosis of microalbuminuria and institution of therapy, many experts recommend continued surveillance both to assess the response to therapy and disease progression. In addition, assessment of renal function is important.

### Diabetic Neuropathy

Peripheral and autonomic neuropathy are the recognized microvascular complications of

# INSULIN PUMP THERAPY: a wearable pancreas

Antonietta Corazon S. Sison, MD  
Maria Reina Hospital

Type 1 and insulin-requiring Type 2 diabetics are well aware of the rigid schedule and multiple injections they have to endure to control their blood sugar. And on top of this, they still have to suffer through hypoglycemic episodes and to deal with hyperglycemia due to the variability in insulin absorption.

Insulin pump therapy has already been available for several years. It has not gained popularity because of the ungainliness of having to carry around a big box attached to one's body. However, newer and

smaller pumps which can be worn like a pager or in pouches are now available. A pump is attached to an infusion set with a cannula inserted under the skin. The system is constructed so that the patient can disconnect the pump from the infusion set and still perform normal activities like swimming and bathing.

Pump therapy is like having an artificial pancreas. It delivers basal insulin requirements and boluses during meals when more insulin is needed. Of course, one needs to program the pump according to

blood sugar testing and activity level. Programming the pump has become easier, because of the remote control device which allows the patient to do this without touching the pump.

The patient can enjoy the freedom to do what he wants without adhering to a regimented schedule. He can wake up late and have a late breakfast. He can eat his meals when he wants and where he wants without carrying around all the paraphernalia needed for multiple injections.

Since the pumps use rapid-acting insulin, blood sugar response is more predictable. There is less risk of hypoglycemia because of the shorter duration of action of the insulin used. Blood sugar is easier to control - bringing us closer to the ultimate goal of diabetes management - the reduction of the risk of long-term complications.

## Cilostazol

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50 mg Tablet  
Anti-platelet

### COMPOSITION AND DESCRIPTION

#### Composition:

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PLETAAL\* Tablets are indicated for the treatment of ischemic symptoms including ulcers, pain and cold sensations in chronic arterial occlusion.

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## Everything you always wanted to know about DI

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

In this issue of Diabetes Watch we will tackle issues about insulin, the old, the new and what the future holds. Insulin is a very important treatment to control blood sugars. It is used for both type 1 and type 2 Diabetes. It is the treatment of choice in pregnancy, in patients undergoing surgery and in diabetic ketoacidosis. -Read on to know more about insulin.

*What are the different kinds of insulin?* Insulins are different from each other in terms of how soon the insulin starts working (onset), when it works the hardest (peak time)

and how long it lasts in your body (duration of action).

*Are there different fast acting insulins?* Yes. Lispro insulin which reaches the blood within 15 minutes after injection, peaks 30-90 minutes and may last as long as 5 hours. The other type is the short - acting regular insulin which reaches the blood 30 minutes after injection, peaks within 2-4 hours and stays in the body for 4-8 hours. This insulin is used for multiple insulin injection regimens (4x daily injections).

*Is there a long acting insulin?* Ultralente takes 6-14 hours to start working. It has

no peak or a very small peak 10-16 hours after injection and lasts between 20-24 hours. A new long acting insulin analogue - glargine has recently been approved for use by the US FDA. It is useful as basal insulin in multiple injection regimens. It has a flat absorption profile and yet comparable bioavailability to the intermediate acting NPH insulin.

*What about mixed insulins?* Mixed insulins are fixed combinations of regular insulin and NPH insulin. The problem with this fixed formulation is you can't adjust one without

affecting the other. The advantage is its convenience.

*Why can't insulin be swallowed?* Insulin is a protein and can easily be digested if swallowed. The normal route of injection is subcutaneous (under the skin). It can, however, be given intravenously or intramuscularly.

*Are there other routes available?* Alternative modes of delivery have been studied throughout the years. They have experimented with the use of drug carriers, enzyme inhibitors, absorption enhancers

(Continued on page 16)

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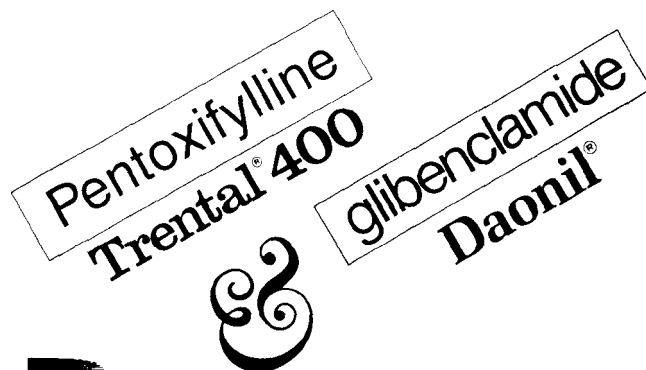
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Since the discovery of insulin, it has been said that self-monitoring of blood glucose is the best way to empower people with diabetes. It has revolutionized their lives. Rather than diabetes controlling them, they can now control their diabetes.

There are two major ways to monitor one's diabetes.

- (1) Have your glycosylated hemoglobin A1c (HbA1c) checked.
- (2) Self blood glucose monitoring.

The HbA1c is the most important, and the most meaningful test for determining your overall diabetes control. It is lamentable that some health practitioners still rely solely on the fasting blood glucose to assess diabetes control. HbA1c reflects the average blood glucose values over the last two to three months. Research has shown that the closer your HbA1c is to normal, the less

likely you are to develop complications. It has been suggested that the ideal goal is less than 7% and that there is a need to take action if HbA1c is greater than 8%. If your HbA1c is higher than target, you need more information to decide what kind of changes you should make in your diabetes treatment program.

This additional information will come from checking your blood glucose. If your HbA1c is above your target, it tells you that you need to make changes, but it doesn't tell you what changes would be useful. This can be answered by blood glucose monitoring (BGM).

## SELF-MONITORING OF BLOOD GLUCOSE: The Cornerstone of Diabetes Self-Management

Buena D. Domingo-Sapang, MD  
Cardinal Santos Medical Center

BGM is a wonderful tool that will allow you to learn more about your diabetes and your body. Each blood glucose value that you get is like a piece a puzzle. The more pieces of the puzzle you have, the clearer the big picture will be.

Discrepancies between HbA1c level and results of the self-monitoring tests may be an indication of inaccurately performed or fabricated results. Blood glucose monitoring is a way to get feedback from your body about how well your treatment plan is working for you. The numbers allow you to learn what causes your blood glucose to get too high or too

low. If you choose to eat a different food than usual, you will learn by monitoring your blood glucose, the effect that food has on your blood glucose. If you start to exercise, you will be able to see a change in your blood glucose. Blood glucose monitoring also helps you to explain your mood swings. When your blood glucose levels are erratic, your mood also swings up and down. It is not easy for the people around to live with the highs and lows. Monitoring will certainly help you to become a better human being. One grateful woman even claims that monitoring her blood glucose regularly saved her marriage because she was able to make her spouse understand why she has mood swings. Your doctor or your health care team will discuss what your target range for blood glucose levels should be. For many people the goal will be to

(Continued on page 12)

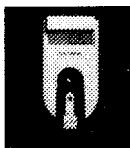
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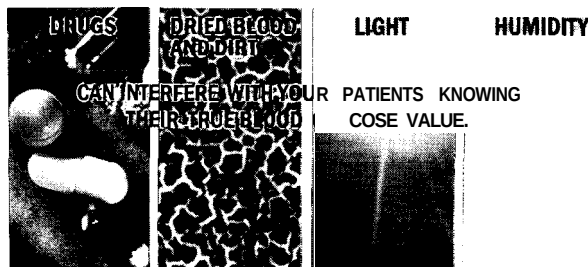
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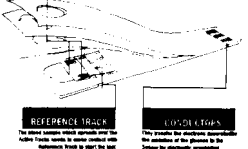
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REFERENCE TRACK

The glucose oxidase (GOx) enzyme is embedded in the strip's test pad, which is in contact with the blood sample. The test pad's unique design allows the glucose to flow into the test pad, where it is oxidized by the GOx enzyme, creating a signal that is proportional to the glucose concentration in the blood.

CO-REACTANT

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## DiabetesWatch

### Self-Monitoring...

(From page 11)

get as close to the range of 80-140 mg as possible. When your blood glucose levels are not in the target range, you should work with your doctor or health care team. Together you can make changes in your diabetes plan. These might include changing your eating pattern, your exercise, the type of diabetes medications you take, or the dosage. Eventually you may learn how to make these changes yourself.

#### IS THERE REALLY A NEED TO CARRY OUT THE SELF-MONITORING OF BLOOD GLUCOSE?

The United Kingdom Prospective Diabetes Study (UKPDS) - the largest clinical study ever to have been done in the field of type 2 diabetes, spanning twenty years from 1976, costing 23 million, and the earlier Diabetes Control and Complications Trial (DCCT) for type 1 diabetes - which took 10 years to finish and was completed in 1993--have provided a very clear answer to this question. Both landmark studies have confirmed the association of improved blood glucose control and the prevention of diabetes complications. This can be achieved if the blood glucose levels are controlled as close to normal range as possible. Without blood glucose monitoring, the goal of near-to-normal blood glucose levels is neither safe nor feasible.

#### WHEN DO YOU CHECK YOUR BLOOD GLUCOSE?

Generally, the best times to check are before meals and before bedtime. Sometimes it is helpful to check blood glucose 1-2 hours after a meal to see the effect of food on your blood glucose levels. Look at all your blood glucose readings and ask yourself if there is a pattern. Are the blood glucose levels higher

than your target? Are they lower? Once you see a pattern, ask yourself what might be causing the blood glucose to be too high or too low. If you know the reason, do something about it. If you do not, that is the time to call your doctor or your diabetes team.

#### CHOOSING THE RIGHT MONITOR

On purchasing a blood glucose monitor, many things have to be taken into consideration by the potential user. What does it cost? Is it user-friendly? Is it accurate? Your doctor or diabetes team will help you decide which kind to buy.

The rate of development of new equipment enabling the self-monitoring of blood glucose has skyrocketed during the last 10 years. The once large, cumbersome and complicated devices have now become small and practical, with perfect data systems, making self-monitoring easier and more comfortable. The first prototypes of non-invasive blood glucose monitors have also appeared, and several researchers are working to develop a "close insulin system"-the so-called artificial pancreas.

The world's first continuous glucose monitoring system (CGMS) has recently been introduced abroad and is considered a major breakthrough in diabetes care. One can get a continuous picture of your blood glucose activity levels over several days. The CGMS consists of a tiny sensor that is inserted just under your skin (much like an infusion set) that is connected to a small recording device worn on your belt. The system reads and records your glucose levels every five minutes (that's equivalent to 288 finger sticks worth of information a day). After 3 days, you return to your doctor who downloads the

information to a computer program. A graph shows all your blood glucose activity for up to 72 hours.

Self-monitoring of blood glucose is the basis for safe, flexible and balanced diabetes care. It is recommended for all people with diabetes. Without self-monitoring, diabetics and health care professionals can only rely on guesswork when estimating the progress of treatment. So let this be a challenge to all diabetics. Do your self-monitoring of blood

glucose. Be an expert about your own condition. Be in control of your life. Don't allow diabetes to control you. As the International Diabetes Federation stated in its World Diabetes Day '99 report entitled "DIABETES COSTS AND YOU": "Prevention means intervention now! Action taken early in the course of diabetes is more beneficial in terms of quality of life and more cost-effective especially if this action can prevent hospital admission."

### Microvascular...

(From page 9)

diabetes. In type 1 diabetes, evaluation is done 5 years after onset and yearly thereafter. In type 2, evaluation of function is done at diagnosis then yearly thereafter. In those found to have autonomic dysfunction, close follow-up will be required.

In summary, remember to screen for microvascular complications 3-5 years post diagnosis in type 1 diabetes or when puberty is reached, then at least yearly thereafter if negative. For type 2 diabetics, screening is done at time of diagnosis and yearly thereafter. A special case is the pregnant diabetic who will need close follow-up throughout pregnancy.

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Heart disease is a major cause of death in Type 2 Diabetes. The Framingham Study in the United States showed that the incidence of cardiovascular disease is twice higher among male diabetics than in non-diabetics. In women, the risk is triple in the presence of diabetes.

#### Risk Factors

Hyperglycemia (high blood sugar) and insulin resistance seem to be the common ground for the high cardiovascular risk among diabetics. High blood sugar leads to a number of chemical reactions that cause dysfunction and damage to the blood vessel walls.

Obesity in diabetes—termed "Diabesity" by Dr. Paul Zimmet—is another contributing factor. Visceral fat located around the liver and intestines, is particularly harmful, as it is the source of bad cholesterol which accelerates atherosclerosis.

Other factors are hyperten-

sion, two times more frequent in people with type 2 diabetes, and blood clotting abnormalities which favor clotting more than fluidity. Diabetics have increased clotting factors such as PAI-1 and fibrinogen which can lead to the formation of emboli.

#### Acute Myocardial Infarction (Heart Attack)

Coronary artery disease may result in a heart attack. It is precipitated in most cases by a break in the vessel wall followed by clot formation. Diabetics have more extensive coronary artery disease as seen in two large-scale trials: the Thrombolysis and Angioplasty in Myocardial Infarction

## HEART DISEASE IN TYPE 2 DIABETES: INEVITABLE OR PREVENTABLE?

Josephine Carlos-Raboca, MD  
Makati Medical Center

(TAMI) and the Thrombolysis in Myocardial Infarction Phase II (TIMI-II). People who suffered a heart attack (myocardial infarction) underwent catheterization or coronary angiography to visualize the heart blood supply. Diabetic persons had a greater incidence of multiple vessel involvement than their non-diabetic counterparts. This implies a more severe outcome for heart attack in diabetic patients resulting in more episodes of heart failure, recent infarction, arrhythmia (irregular heartbeat), cardio-genic shock and death.

#### Silent Ischemia

Unrecognized heart attacks (silent ischemia) are common in diabetics because they have a blunted appreciation of heart pain. They either feel no pain or the chest pain is not typical. This is because the nerve supply to the heart is affected in a condition called autonomic neuropathy. When silent ischemia occurs on exertion, people with diabetes lack the warning signals making them more prone to irregular heartbeats, heart attack and even death.

#### The Diabetic Heart (Diabetic Cardiomyopathy)

Even in the absence of coronary artery disease, the diabetic heart may develop congestive heart failure from a prolonged relaxation time after a contraction (diastolic dysfunction) due to thicker heart wall. Heart enlargement and muscle thickening have been associated with this condition.

*Can something be done for heart disease in type 2 diabetes?*

Strategies to prevent, retard or improve the outcome of cardiovascular disease encompass good metabolic control such as normalization of glucose and cholesterol levels, control of blood pressure and aggressive reduction of cardiovascular risk factors such as smoking and obesity and early detection and treatment of existing disease. Lowering of blood pressure <130/85 and LDL <100 mg/dl are recommended.

ACE inhibitors are the preferred agents in diabetics because they not only lower blood pressure but cause vascular remodelling as well. In the recently concluded Heart Outcome Prevention Evaluation (HOPE) Study, the use of Ramipril, an ACE inhibitor, has been shown to significantly reduce heart attack, stroke and death by 25% in diabetic patients, with and without existing heart disease.

The antioxidants Vitamin C and Vitamin E as well as aspirin are helpful in reducing the cardiovascular risk. The Diabetes Mellitus Glucose Infusion in Acute Myocardial Infarction (DIGAMI) study showed a reduced death rate in diabetics who suffered heart attack put on insulin for at least 3 months for tight glucose control. This was seen in the short term and long term (3.5 years) follow up periods.

Novel therapies will have to be discovered to further reduce heart disease among diabetics. Work is being done on pharmacological blockage of Protein Kinase-C (PKC). Another area of investigation is on the genetic variants related to cardiovascular disease. Future therapy will be guided by the patient's genetic profile. The Beacon gene in rats has recently been isolated. The Beacon protein now joins leptin and Neuropeptide Y as potential targets for pharmaceutical intervention for the treatment of "diabesity."

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Individuals with diabetes mellitus comprise a very significant segment of hospitalized patients because of the serious nature and prevalence of the disease. One out of four hospitalized patients has diabetes mellitus, whether this was previously diagnosed or only known during admission to the hospital. There are many reasons why diabetics frequently need in-patient care particularly if sugar control is poor. Acute diabetes-related conditions such as ketoacidosis, hyperosmolar or hypoglycemic coma easily come to mind. But chronic diabetic complications and other associated conditions are the more common causes for admissions. Among these are heart attacks, heart failure, brain strokes, kidney failure, foot problems, infections and various surgical problems. Some are acute and can be life-threatening. However, some diabetic patients are admitted for conditions unrelated to diabetes such as trauma, cancer treatment, asthma and other illnesses that may require steroid therapy.

Very sick, hospitalized patients are significantly malnourished, this is attributed to the bodily responses to illness or injury. At least one-third to one-half of these patients, especially in the intensive care unit setting, have the so-called protein-calorie malnutrition. This type of malnutrition is an exaggeration of starvation effects, body fuels are handled deficiently, causing wasting. This "breakdown" mode leads to marked weight loss, particularly of lean tissues from wasting of protein stores. This chain of events turns into a vicious cycle because most hospitalized patients do not get adequate nourishment. Loss of appetite, gastrointestinal problems and changes in mental status are some of the factors aggravating this situation. Why is this important? Because a malnourished, sick patient gets sicker,

# WHEN THE USUAL DIET IS NOT ENOUGH: FEEDING THE VERY SICK DIABETIC

Gabriel V. Jasul, Jr., MD  
St Luke's Medical Center

stays longer in the hospital and recovers more poorly than the properly-fed patient. In the end, the malnourished patient has higher hospital bills and poorer outcomes in terms of disability or even death.

When we factor in diabetes mellitus in a malnourished patient, the picture becomes even more serious. In fact, diabetes mellitus is not only associated with frequent hospitalizations but with longer hospital stay, usually related to infectious complications. What makes the sick diabetic patient a "sicker" patient? The bodily responses to illness and injury, as noted earlier, are heightened in diabetic patients. This increase in the "breakdown" mode is due to the effects of increased amounts of "stress hormones" (epinephrine, cortisol, glucagon, growth hormone) which act against insulin. Diabetes mellitus, by itself, is already a state of absolute or relative lack of insulin. With illness or injury, the body's machinery does not handle body fuels properly because insulin can not function well. The net effect is worsening of hyperglycemia and therefore, higher sugars which are more difficult to control.

Preventing malnutrition from occurring in the sick diabetic patient is a primary goal during hospitalization, feeding therefore becomes medical treatment. Several ways of feeding the sick patient, whether diabetic or not, can be used. The primary form of feeding is orally or by mouth. This is the best way to nourish a patient but

often, this is not feasible. Sick patients often have poor appetite and may have problems swallowing or digesting. Oral liquid formulas are available and can be used to supplement the usual diet served in the hospital. These can be given with the main meals or as snacks. Since they are in liquid form, they can be given in those with chewing or swallowing problems. Various preparations are available such as complete essential formula or high protein supplements and can be suited to the sick patient's needs.

What happens when such

supplemented oral diet is not enough? More specialized forms of feeding are available for short and long-term use depending on how sick and malnourished the patient is and how long the patient is unable to eat adequately. How much is enough? The doctors and the nutritionist-dietitians estimate the patient's daily requirements and what the patient is able to consume. They then gauge whether that amount is enough for his/her daily needs. They then evaluate the form and content of feeding needed by the patient. For example, a patient who already had lost 5% of body weight and only finishes less than half his meals for the past 7 days or so is at nutritional risk. Specialized feeding is then warranted.

Feeding that uses the gut (gastrointestinal tract) or enteral nutrition is the recommended form when the gut works. Why? Because it is natu-

*(Continued on page 15)*

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**When the usual...**

*(From page 14)*

ral--being only slightly different than oral or mouth feeding and because it is safer, with few complications and is less costly than feeding by vein. Enteral feeding may also be associated with reduction of nosocomial infections. This type of feeding uses tubes inserted for administration of liquid food, hence the term tube feeding.

With regards to enteral solutions, osterized solutions were widely used before but their variable day-to-day nutrient content and other qualities (dense, viscous, milk-based) make them insufficient and unreliable for use in sick patients. Several standard commercial formulas are now in the market and their nutrient profiles are more consistent and adequate for general use. Modified formulas are also available for use in specific situations, like calorically

denser preparations (lesser fluid content) for those with too much body fluid like heart or kidney failure patients or lower protein-containing formulas for kidney/liver patients. Elemental or partially digested formulas are available for use for those with problems with absorption, like patients with part of their bowel diseased or cut.

Relevant to our current discussion is the use of modified feeding formulas for diabetes mellitus. There are formulas suited specifically for diabetics and there are two such formulas marketed in the Philippines. Their content is lower in carbohydrates and higher in fat (monounsaturated fatty acid). They reportedly improve sugar control and cholesterol profile. Higher fiber-containing formulas also lead to better sugar handling in diabetics. These findings are especially true for short-term enteral feeding but long-term studies

are lacking. Need for disease-specific formula in diabetes mellitus is still under investigation and thus, the current recommendation is to use balanced, standard formulas providing the right amount of calories and proportions of the body fuels. This is in keeping with the general guidelines for dietary management in diabetes mellitus.

When enteral tube feeding is not adequate or is not possible because of a non-functioning gut, the last resort is feeding by vein. Intravenous or parenteral feeding has definite but fewer indications, is expensive and has more complications. When the situation calls for its use, as in bowel obstruction or severe diarrhea, special intravenous catheters and solutions are used and a trained nutrition team led by a physician-nutrition specialist should oversee the entire process, including monitoring. Combination of these modalities of feeding can be used once the patient starts to get better. For instance, after total parenteral nutrition for 1-2 weeks, intravenous therapy can be used with tube feeding while transition to full enteral feeding or full oral diet is not yet possible. Similarly, relatively stable patients can be given tube feeding plus usual tolerable oral diet and later modified accordingly. A few patients would require long-term specialized nutrition and more advanced centers supervise home nutrition therapy programs. Review of the goals of feeding therapy and institution of treatment plans should be done regularly. It should be noted that body weight alone is not an adequate parameter of improvement or deterioration. The attending medical team should measure biochemical and body composition parameters periodically to monitor efficacy and safety of nutritional

treatment.

While the basic guidelines for specialized feeding are similar for sick patients with and without diabetes mellitus, certain points need to be emphasized in feeding the sick diabetic. The major point is adequate blood sugar control because this will ensure proper fuel handling. Blood sugar levels in the range of 100-200 mg% are acceptable during the acute phase of illness. Further fine-tuning to better control (100-150 mg%) is attempted once the patient is more stable. How is this achieved? Frequent monitoring of sugar levels using reflectance glucose meters at bedside every 4-6 hours until stable is needed to determine an appropriate insulin regimen.

Frequency of glucose monitoring can then be reduced accordingly, e.g. before meal. Use of insulin during acute illness avoids the extremes of low and high sugar levels. Care must be taken to prevent both hypoglycemia and hyperglycemia because they can worsen the diabetic's general condition. Giving too little nutrients (underfeeding) or too much (overfeeding) can actually contribute to these problems.

In summary, the need to address the nutritional needs of the hospitalized diabetic patient can not be overemphasized. Adequate diabetes control is key to maintenance of a healthy nutritional status. Judicious use of insulin, even temporarily for those who are not previously insulin-requiring, ensures not only sugar control but also efficient utilization of body fuels during periods of stress. Use of the different ways of feeding sick patients should reduce, if not eliminate, the risk of malnutrition in the sick diabetic. Hopefully, improved nutritional status of hospitalized diabetic patients is translated into improved outcome.

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## PSEM 2001 Convention

The 2001 Philippine Society of Endocrinology and Metabolism Annual Convention will be held on January 22-23, 2001 at the Edsa Shangrila Hotel. The theme is "New Perspective in Endocrine and Research." The two day affair will feature local speakers and guests from Europe and

United States. Innovations for this year include 8 "Meet the professor sessions" and the presentation, judging and awarding of 2 research grants namely: 1) PSEM Research Grant in Endocrinology and 2) the PSEM - Servier Research Grant for Diabetes. See you there!

## Philippine Diabetes Association Foot Council

The PDA Council on Foot Care will be holding a one day convention on the Diabetic Foot in culmination of its activities for this year. This will be held at the EDSA Shangrila on December 12, 2000.

The convention will feature new trends in wound management and a symposium on

diabetic foot ulcers and vascular issues. There will also be 3 simultaneous workshops on screening for the high risk foot, simple podiatry problems such as callus and ingrown toenails and wound dressing. Two foreign speakers will be lending their expertise for the event, Dr. Denise Findlay (Australia) and Mr. Tye Lee Tze (Singapore).

### Everything...

(From page 10)

and other additives and formulations. Transdermal is one route which holds some promise - helium gas jets, iontophoresis, ultrasound and transfersomes are all methods to facilitate transdermal delivery. Sounds high-tech, doesn't it?

#### What about nasal insulin?

The body mucosae especially the nasal route offer a promising target for polypeptide drug delivery. Buccal or sublingual deliveries are feasible alternatives. But they all present problems of bioavailability.

I heard about inhaled insulins. Is it as good as subcutaneously given insulin? The lung presents a large, well

vascularized absorptive surface for drug administration and is currently the most promising alternative to subcutaneous injection. Inhaled insulin has been shown to be rapidly absorbed and mimics insulin secreted from the pancreas in non diabetic subjects. A fine powdered human regular insulin has been developed for inhalation. It is currently under investigation and seems to be well liked by patients.

#### How is insulin delivered?

Insulin is given by syringe. Insulin pens and insulin pumps are likewise available. Some insulin pens contain a cartridge of insulin that is inserted into the pen. Some pens are filled with insulin and are discarded after all the insulin has been used.

## International Diabetes Federation Convention

The Philippine Diabetes Association will be able represented at the 17th International Diabetes Federation Convention from November 5-10, in Mexico.

PDA president Dr. Lina Lantion-Ang, chairs the Guidelines and Continuing Quality Development session on November 6, 2000.

Dr. Rosa Allyn G. Sy, as Secretary of the PDA and Editor of Diabetes Watch will participate in the 5th International Diabetes Magazine Meeting from November 2-4, 2000 in Cuernavaca, Mexico City.

Last but not least, Mrs. Susan Trinidad, RN will speak on "Art of Education: The Filipino Way," on November 10, 2000.

*What is the best insulin for me?* You will need to consult your doctor about that. Your blood sugars, your lifestyle, your age and a lot of other factors will guide your doctor. You both have to come to terms with which insulin regimen will be best for you.

For further information,



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