



DiabetesWatch

A publication of the PHILIPPINE DIABETES ASSOCIATION, INC. for the Filipino diabetic patient

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DIABETES CLINIC: AN ANSWER TO THE GROWING NEED OF PATIENT EDUCATION

The active concern with educating patients started some 70 years ago when Dr. Elliot P. Joslin realized the importance of educating both persons with diabetes and their families in order to sustain life. This was long before education became an accepted part of treatment. It was once considered a luxury. Dr. Joslin's attitude was "The diabetic who knows the most lives the longest." More recently the World Health Organization has stated that "Education is a cornerstone of diabetic therapy and vital to the integration of the diabetic to society."

Why is education so important?

In other disease conditions, it is not so critical to let the patient understand their disease as long as appropriate instructions are given. But with diabetes it is quite different. Unless the patient cooperates with his management, there would be failure for the clinical application of the principles of the disease control to work. And, the key to making the patient an active and willing participating member of his health care team is EDUCATION, which is now the fourth prong in the meaningful management regimen of the diabetes afflicted patient. Quality care can only be achieved by informed patients cooperating with knowledgeable and concerned health care providers.

Survival is probably the best reason for educating diabetics. Other reasons are to insure a longer life, improve the quality of life and decrease the cost of diabetes care.

The education of the patient which we are trying to promote can only be achieved if there will be a team approach on the part of the health care provider and consumer. A team is ideal because diabetes is so complex and demanding that no doctor can have the time to fully handle every one of the patient's needs. The team includes the doctor as the coordinator and main medical decision maker, along with an array of other health professionals,

such as dietitian, nurse educator, social worker, etc.

Perhaps, the creation of a Diabetes Clinic is the answer to the growing needs of educating a diabetic client.

A Diabetes Clinic offers to the patient its facilities to educate him on what diabetes is, its various forms of management, the use of the food exchange list, the action of both oral and parenteral hypoglycemics, the correct way of administering insulin, the various monitoring devices both for determining urine and blood glucose, proper way to care for himself on sick days, and lastly the correct way to care for his feet, skin and teeth.

It should offer its facilities for in-patients and out-patients, regardless of who the doctor is or which hospital one goes to, for individual or group instruction, for the totality of its course or just a part of it.

At the end of the program, the clinic educators will evaluate the patient and their assessment of the client's knowledge will be forwarded to the attending doctor.

Classes start with an assessment of the patient's entry behavior and physical assessment being done by the medical staff. The lectures are followed by a good interaction with patients and a question-answer session. Typically it may be conducted for two days, two hours per session.

From the feedbacks received after two and a half years of existence of a local Diabetes Clinic, it appears that the clinic has been effective in educating the client. The following results are observed by their doctors after attending the sessions:

- knowledge of diabetes had increased considerably;
- skills improved like the use of monitoring devices, correct injection techniques and care of the feet, skin and teeth;
- metabolic control improved.

In diet alone, patients who really

comply with their diet regimen claimed that their blood sugar was better controlled than before.

They were able to understand the importance of maintaining a good control of their blood sugar. It helped them to create an awareness about the signs and symptoms of low and high blood sugar and what immediate measures to be done.

For the diabetic patient attending the clinic, this is the chance to acquire a wealth of information about diabetes mellitus. Moreover, it provides motivation to diabetics to stick to the dietary advice.

Finally, through the clinic, we are able to attain our goal - which is to educate the diabetic client and to motivate this client to transfer the knowledge they acquire into compliant behavior.

- S.B.T.

*- the test with an elephant memory
for blood glucose levels:*

GLYCOSYLATED HEMOGLOBIN

A test that is becoming more prominent in the management of the diabetic patient these days is the determination of glycosylated hemoglobin. What is it?

Body proteins combine with sugars in the blood - the process is called glycosylation. And, the protein then becomes a glycosylated protein.

Hemoglobin is the substance inside the red blood cells which carries oxygen from the lungs to the various cells of the body. Hemoglobin is a protein, it can combine with sugar that enters the red blood cells, thus the hemoglobin becomes glycosylated. The higher the blood sugar, the greater the glycosylated hemoglobin level.

This glycosylated hemoglobin is known by several names, e.g., hemoglobin A1c or HbA1c, glycohemoglobin, 'fast' hemoglobin, or more recently glycated hemoglobin. The latter name has been adopted by the World Health

(Continued on page 4)

Carbohydrate is the nutrient that provides the bulk of our energy needs. It is a complex organic compound that is made up of sugar or saccharide units. Ripe fruits, sugar and sugar concentrated products are carbohydrate sources that are made up of single and/or double sugar units (monosaccharides or simple sugars and disaccharides respectively). Starches that are derived from cereal and cereal products like rice, oatmeal, bread and noodles; unripe fruits and vegetables; legumes like green mungo, red beans and white beans; and tubers like potatoes, camote and cassava are sources of carbohydrates that are made up of more than ten (10) sugar or saccharide units called polysaccharides or complex carbohydrates. Skins of fruits, coverings of nuts and legumes, seaweeds and stems and mature leaves of vegetables, and which are generally referred to as 'fibers,' are also polysaccharides which although indigestible and therefore do not provide energy have significant physiological functions.

The recommended level of carbo-

CARBOHYDRATES AND DIABETES MELLITUS

hydrate intake for diabetics whose weights are within their desirable weights for their heights is no different from that of non-diabetics; that is, 50-60% of total calories.¹ (The level goes down to 40-45% of total calories for diabetics who should lose weight). The difference lies in the definition of the food sources of the nutrient: for diabetics, carbohydrate sources:

1. completely excludes sugar and sugar concentrated products like candies, cakes, jams, syrups, soft drinks, ice cream, etc.; these are sources of simple sugars or monosaccharides
2. are limited to polysaccharides or complex carbohydrates
3. allows fruits and milk up to a level where they contribute 20-25% of total carbohydrate or 5-15% of total calories.

Non-diabetics on the other hand have no

restrictions on their carbohydrate sources.

All digestible carbohydrates are ultimately degraded into their elemental form; that is, single unit or simple sugars (monosaccharides). So why the elimination of sugar and sugar concentrated products and the limitation of fruits and milk to diabetics? Obviously, sugar and sugar products, ripe fruits and milk, which are made up of, or contain single and double sugar units (mono and disaccharides), are readily and completely digestible upon ingestion (it only takes one step) so that glucose is rapidly released into the blood stream resulting in the sudden elevation of blood glucose level. On the other hand, complex digestible carbohydrates take longer to digest so that there is a slower release of glucose to the blood.

What about the complex non-digestible carbohydrates? Of what value are they if they are not sources of energy? That they regulate intestinal movement or 'peristalsis' and prevent constipation is known to everybody. That regular bowel movement prevents

¹Energy requirement which is measured in terms of kilocalories and supplied by carbohydrate, protein and fat in food is adequate if an individual's weight is maintained within the ideal weight for his height, body frame, age and activity. Given two individuals of the same height, weight and age; one an athlete and the other of sedentary activity; the former will have a much higher energy or caloric requirement.

OPTIMAL INSULIN TREATMENT

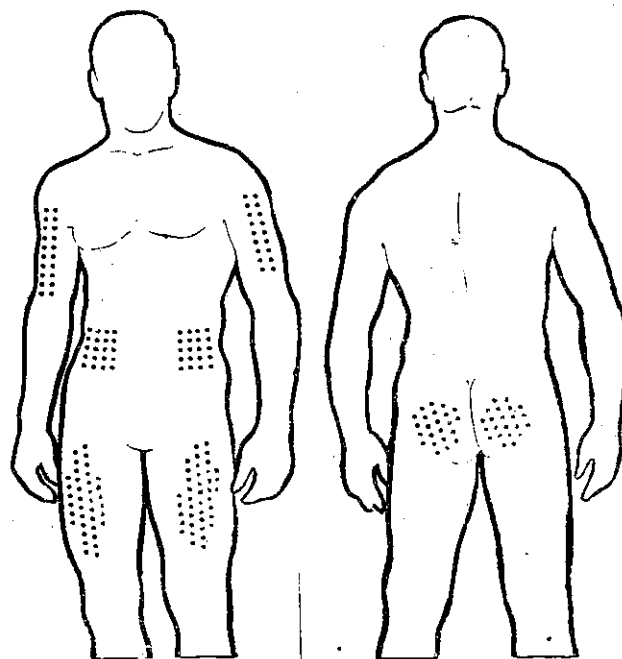
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Tip for the Diabetic:

CHANGE SITES OF
INSULIN INJECTIONS DAILY



or reduces the probability of the development of toxic substances that may be carcinogenic or that may stimulate the formation of carcinogenic substances is a popular concept although still under investigation. That they are fillers but essentially caloric free make them valuable to individuals who need to lose weight. Of most significance especially for diabetics is the effect of high fiber load on blood glucose level; results of studies have consistently shown that high fiber load results in a lower blood glucose level compared to another diet with the same caloric and carbohydrate levels but low fiber load.

How can the fiber load of the diet be increased? Include the following and you are assured of a good fiber load: unpolished rice, whole wheat bread, oat meal, legumes, fruits and nuts with skin, mature leaves and stems of vegetables, chesa, chico, cassava, camote, banana heart, banana flower, seaweeds like gamet and the lowly gulaman.

In summary, the four things to remember in the selection of carbohydrate sources are:

1. eliminate sugar and sugar concentrated products — these are sources of readily available monosaccharides or simple sugars
2. limit selection to complex carbohydrates
3. limit fruits and milk to amounts allowed per your meal plan by a Dietitian
4. include foods with high fiber

— L.C.L.

IN THE NEWS

Donations

Rev. Fr. John Montenegro recently donated P2,000.00 for the *DiabetesWatch*. Atty. Marcelo Karaan chipped in P500.00. Kudos to them!

Annual Convention

Plans are afoot for the annual convention of the PDA. Slated for November 25, guest lecturer will be Dr. John Ma from HongKong. Lay activities are aplenty, with new gadgets to be on display. The venue will be announced later — members are requested to cross out this date on their appointment books.

IV AFES Congress

The IV Congress of the ASEAN Federation of Endocrine Societies will be held in Manila for the period, November 30 to December 4, 1987. A Diabetes Update program will be held November 30 and December 1. Again, lay participation is being planned.

Standardized Tests for Diabetes

The Section of Medical Technology of the PDA is working with the Philippine Society of Pathologists to issue a handbook on diabetes methodologies. This will hopefully standardize the tests that are currently in use for the detection and management of diabetes. The handbook is expected to come out in three months' time.

Why the NERVES in DIABETES?

The nerves are the cables carrying various forms of information from the outside world or from internal organs in the form of nerve impulses which are eventually fed into the brain or which are sent by the brain to our muscles or internal organs.

This information may come from special receptors (vision, sound, smell, taste) or from receptors in the skin, tendons, muscles and joints (somatic sensory) sub-serving touch, temperature, pain, vibration and position sense or from receptors in the interior of the body (autonomic sensory) monitoring all our visceral machinery involved in the processing of food, in the maintenance of the vital processes of the body and keeping the proper internal milieu necessary for survival.

The impulses sent down by the brain to elicit certain behavior may be sent to the various skeletal muscles (somatic motor) causing movements of the body or to certain internal organs (autonomic motor) causing such functions as salivation, sweating, regulation of heart beat and penile erection.

The nerve cell sends a long filamentous extension called an "axon" ending up in either a receptor (sensory nerve) or effector (motor nerve). It may be naked ("unmyelinated") or it may be wrapped up in a complex bimolecular lipid layer in which case it is said to be "myelinated". The nerve may also be large or small. Conduction of impulses is faster in large myelinated nerve fibers and much slower in small unmyelinated nerve fibers.

In diabetes mellitus, there are two means by which the nerve could be damaged. Firstly, single nerves or several nerves in different parts of the body may be involved in an asymmetrical pattern. If these nerves are closely examined by serial sections, several tiny vessels supplying oxygen and nutrients to the nerve are occluded thus causing death to several sections of the nerve. The other way in which the diabetes mellitus may affect the nerve is by a defect in the metabolism in the nerve causing degeneration and swelling of the axon or segmental areas of destruction and reformation of its myelin wrappings. Such factors as prolonged uncontrolled high blood sugar, defects in protein synthesis and transport in the nerve cell and lack of certain metabolites such as myoinositol in the nerve have been implicated. This type of nerve involvement starts at the distal portion of all limbs going slowly proxi-

mally and has a very symmetrical pattern.

Depending upon the mechanism of nerve involvement, clinical pattern and the kind of nerve involved, the following types of nerve involvement ("neuropathy") may therefore be found in diabetes mellitus:

1. Distal symmetrical primarily sensory polyneuropathy (several nerves). This is the most common form. Its mechanism is most likely a metabolic derangement. It is primarily sensory. Motor weakness when present is mild and distal involving the foot muscles. If the large myelinated fibers are mainly involved, you have a painless distal sensory disturbance with diminished proprioception and vibration sensibility. Such patients complain of dizziness on suddenly getting up to walk because of a momentary disorientation in space. Their deep tendon reflexes are diminished to absent. If the small unmyelinated fibers are involved, there is severe burning pain in the fingers and toes, hypersensitivity of the hands and feet and autonomic disturbance. The majority of patients fall in between the two extremes.
 2. Autonomic neuropathy involves small autonomic fibers and may be manifested with impotence, postural hypotension, bladder and gastrointestinal disturbances as well as sweating disturbances.
 3. Proximal motor neuropathy may be asymmetric and of rapid evolution if caused by small vessel disease or symmetric, chronic in evolution if metabolically induced. The former occurs in people over 45 who develop a rapidly evolving weakness of the muscles of one thigh. Sensory symptoms in the form of pain may also be present.
 4. Mononeuropathy(ies) may occur in which one or more nerves in the head, limb or trunk may be involved. A common example is when a diabetic suddenly experiences double vision and closure of one eye when the oculomotor nerve is involved.
- Certain electrophysiologic tests may help in assessing nerve involvement in diabetics. Nerve conduction velocity may be slowed. Motor unit potentials on electromyography may show patterns of nerve involvement.
- It is important to emphasize strict control of the diabetes in terms of diet and medications. As a rule, the rapidly evolving forms of neuropathy may spontaneously recover in 4 to 6 months whereas the slowly evolving symmetric forms also take several months to reverse or may not reverse at all. Several promising forms of treatment such as aldose reductase inhibitors, methylcobalamine and myoinositol are being evaluated.

— M.P.

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PHILIPPINE
DIABETES
ASSOCIATION INC.
with offices at Room SA 301,
Lung Center of the Philippines
Elliptical Road, Quezon City

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Dr. Augusto D. Litonjua

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contributors to this issue:
Susan Bernal-Trinidad, RN, BSN
Augusto D. Litonjua, M.D.
Lelita C. Luciano, RND, BSHE
Marteslo Perez, M.D.

circulation:
Dr. Florentino Lardizabal

Glycosylated ... (from page 1)

Organization to standardize the naming of the test world-wide.

But, why another test?

In the recent years, there has been greater emphasis on strict blood sugar control in an apparent effort to ward off the complications of diabetes mellitus. It is accepted that a single blood sugar test measures only the level of the blood sugar at the time of the test. That single test — usually done at every office visit — does not ensure the same value for the blood sugar at other times. Thus, between tests, the blood sugar value remains unknown.

The glycosylated hemoglobin, on the other hand, gives an overview of a person's blood sugar control for the past 2-3 months. A very nice description of what the glycosylated hemoglobin is, is given by Goldstein, Valuck and Hazelwood thus, "if your blood sugar was high last week, then more of your hemoglobin was glycosylated than usual. This week, your blood sugar might be back under control again, but your red blood cells will still be carrying the memory of last week's high blood sugar — in the form of increased glycosylated hemoglobin. That memory will not be erased until the last of the red blood cells now in your blood have died and been replaced by fresh cells (with fresh hemoglobin). That takes about three to four months." Remember the elephant? — the animal with the

supposedly long memory?

Normally, about 4 to 8% of the hemoglobin is glycosylated if one has no diabetes. But in a person with diabetes, the glycosylated hemoglobin rises. This rise in the glycosylated hemoglobin will depend on what the average blood sugar level was during the past weeks and months. Thus, even if a diabetic would frantically stick to his diet and medicines, just before visit to his doctor to give a normal fasting blood sugar test, he cannot induce his glycosylated hemoglobin to normalize if the control was poor in the preceding weeks. Thus, the "crime" will out.

So that, the determination of the glycosylated hemoglobin has become indispensable in the proper control of a diabetic patient's blood sugar. It helps confirm the fasting blood sugar and the postprandial blood sugar tests. It can identify patients who are not strictly adhering to the physicians' recommendations. It gives the doctor an excellent basis for judging whether a particular diabetes treatment plan is working or not.

At the moment, the test is available in the following places: the laboratories of Makati Medical Center, Manila Doctors Hospital, Chong Hua Hospital in Cebu, Physiology Department of the U.P. College of Medicine, and the private laboratories of Dr. Ernesto Medina-Cue and Dr. German Castillo.

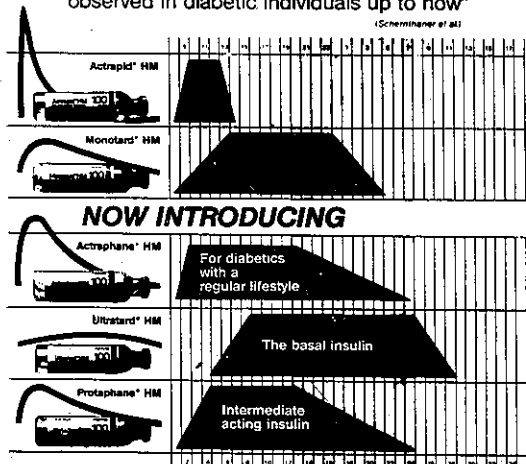
— A.D.L.

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(Schermer et al)



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