UISESS SCALE FOR STAGING AND CLASSIFYING THE CLINICAL-EPIDEMIOLOGICAL RISK IN TYPE II DIABETES MELLITUS AND FOR ESTABLISHING MULTIDISCIPINARY PREVENTITIVE ACTIONS

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Key Words.

Diabetes, Prevention, Scale. Risk.

Precis.

A scale named UISESS for staging the clinical and epidemiological trajectory risk in type 2 diabetes demonstrating that 78% of patient in a family medicine clinic are in unfavorables stages

Summary

Objective: A scale, called UISESS, is presented for staging the clinical and epidemiological trajectory and risk in type II Diabetes Mellitus for the purpose of orienting multidisciplinary prevention actions.

Investigation Design and Method: The Natural History of the Disease and an epidemiological focus on risk were used, creating a five-stage scale, ranging from the pre-pathological stage to the sequelae of Diabetes. Case histories of 3106 persons over 30 years of age and attended by a family practice clinic were used.

Results: The UISESS Scale was used, finding that a large majority of the studied patients (78%) were classified within unfavourable stages for controlling their illness. Of the 3106 people, 87% were diabetic. The average age of the patients was 57.6 years, and 58% were women.

Conclusions: The UISESS Scale appears to be a useful tool to show the distribution, evolution and control of type II Diabetes in a population attended by the outpatient clinic of a family medicine unit, according to the Natural History of the disease.

Introduction

The use of classifications is an important tool in chronic diseases. It provides the frame to identify and differentiate various forms and stages of a given disease, and also orients the prevention, diagnosis, treatment and control of said disease, both at a clinical and epidemiological level.

These classifications have been developed using different measuring scales. Health professionals usually feel more confident with interval-type scales, as more precise criteria are handled. But these have a weakness, that is, the "relative" arbitrariness of their limits (Pickering & Kaplan, 1999). For example, a type II diabetic patient with 119mg of fasting blood glucose is considered a controlled patient, while this same (or another) patient, with 121 mg%, would be typified as having only fair control. These criteria, which would seem arbitrary, are used daily for establishing limits and for making decisions that affect the prevention, treatment and investigation of this chronic disease. This is the basis for which the operating definitions of these classifications, implicitly or explicitly, tend to provoke actions where the benefit level is greater than the inaction level (Rose. 1980). A watchful waiting conduct would only produce, in the case of diabetic patients, a persistent increase in blood glucose for every year that goes by without receiving attention, increasing their risk of complications and death.

The predominating classifications for Diabetes Mellitus (DM) are based on the aetiology and severity of the syndrome, and are useful for typifying it for diagnostic purposes, both clinical and epidemiological. Among these is the classification of the Expert Committee on Diabetes of the World Health Organization (WHO), which dates from 1980. A more recent classification is that of the WHO Study Group on Diabetes Mellitus, which endorses the substantive recommendations of the NDDG (2), in relation to type I, type II and other specific types of diabetes, and Gestational Diabetes (SSA, 1994, ADA, 2002).

The classifications with an emphasis on severity contain the criteria and scales for the control and treatment of DM. They contain an important focus on glucose levels, mentioning the evidenced quality-quantity relation between blood glucose levels and morbidity, quality of life, and mortality.

This situation has been greatly taken into account in the operating definitions in order to establish precise diagnostic criteria and effective treatments. This reduces the bias of mechanically carrying out unnecessary actions, as today DM is understood to be a modifiable process through health promotion, risk prevention, opportune diagnosis and adequate treatment.

Therefore, in order to grade type 2 Diabetes mellitus (DM2) control, the American Diabetes Association (ADA) has constantly upgraded its nomenclatures and criteria (1979)(1999)(2002), with a focus on systemizing the severity of the disease. It also bases itself on the level of patient metabolic control, which is reflected in, among other indicators, the fasting blood glucose level, post-prandial glucose and glycosylated hemoglobin.

It should be mentioned that the classifications based on the etiology and severity of the DM2 are conceptual systems with a Cross sectional character. Their management is complex, as they include other elements, such as demographic information (age, sex and ethnic group), the level of organic damage and the presence of other risk factors. However, the variability in the response of the host to DM2 does not permit the isolated use of each classification. They must be integrated to appropriately contextualize the clinical and epidemiological situation of a given patient or group of diabetic individuals.

The integration of aetiology, severity and risk factors propitiates a longitudinal classification of the illness, which can be expressed as the Natural History (NH) of DM. This is in accordance with the idea that DM is not a static pathological phenomenon, but a dynamic and complex process, which not only involves various physio-pathological alterations, but also includes the important psychological and social alterations in the subject and his environment.

According to available evidence, the longer and more severe the metabolic alteration, the higher the risk of morbidity and mortality. However, in the general population, the larger part of the diabetes burden falls on those individuals with a fair glucose control, associated with other risk factors (Eckardstein, 2000). This disproportionate risk, with relatively low levels of lack of metabolic control, which DM2 generates in the general population, weighs heavily on the means to achieve a maximum reduction in the risks of diabetes. Past strategies that took care of the "high risk" were very effective for certain patients, but contribute little to significantly reducing the morbidity and mortality in the general population.

To this effect, from an anticipatory point of view, it has been mentioned that it would be better to reduce the general population hyperglycemia with adequate calorie consumption, more physical activity and other risk factor modifications, with lower costs than providing medications to low-risk patients. This is why the primary prevention strategies are aimed not to avoid deaths, but to give a solution to the appearance of diabetes at a general population level (ADA, 1999).

On the other hand, within the secondary and tertiary prevention levels, good metabolic control has been demonstrated to reduce mortality and variable morbidity. For example, the DCCT study (Diabetes Control and Complications Trail Research), showed a risk reduction of 47% in serious retinopathy, of 39% in the incidence of microalbuminuria and of up to 60% in the incidence of neuropathy (DCCT, 1993).

Given the anterior, we consider that the use and integration of the NH of the disease in the classifications and criteria presently used could be a promising strategy to propitiate a strict DM2 vigilance, given the actual complexity which is in practice to control it. Also, correct DM staging would allow preventive measures to be taken at all the attention levels.

The objective of primary prevention is to avoid the development or reduce the probability of suffering diabetes, supposedly reducing its incidence. This implies reducing risk factors or the individual susceptibility to the disease.
The objective of secondary prevention is to stop the progression of the disease, and this requires reducing the incidence of complications.
Lastly, the objective of tertiary prevention is the rehabilitation of sequelae and complications, especially macrovascular disease.

At present, few classificatory scales have been developed that follow the evolution of the illness and, at the same time, indicate the risk level presented by each studied case or group, permitting preventative actions to be taken according to the stage of the disease.

Given this, we focused our effort on trying to stage and to establish the risk of progressing in the NH of DM2, taking into account that DM2 is a multi-factorial illness that involves genetic predisposition and various environmental factors. Established determining factors are excess weight, characteristic body fat distribution, hyperinsulinemia and glucose intolerance. Many prospective studies, done predominately in older people, have shown that populations with an elevated prevalence of DM2 also have high blood pressure, high concentrations of LDL-fraction cholesterol LDL and elevated triglycerides. These signs have been considered predictors for the development of DM2. Diabetes mellitus, android obesity, high blood pressure and dyslipidemia form a clinical syndrome called X syndrome or metabolic syndrome, described for the first time at the beginning of the 80s. A common denominator of Metabolic Syndrome is a relative state of insulin resistance. Recent studies point to the theory that even if there are related genetic factors, the environment is the principal determining factor in developing the disease. (Hanefield, 1997). Lately, metabolic syndrome has also been associated with antecedents of hyperuricemia and polycystic ovaries (Ehrmann, 1999).

Metabolic syndrome has been associated with a high rate of adult morbidity and mortality, without needing to mention the serious world-wide economic and social repercussions it causes, principally in developing countries.

Taking into account the relationship between the genetic carriers of the disease and the hereditary, social and economic factors, along with the physical environment, that can predispose the individual to certain illnesses, it must be considered that the precipitating and predisposing causes can be related to the subject's occupational environment and life style (Leavell and Clark, 1965).

Many studies have shown that the lack of glycemic control is associated with micro- and macrovascular complications in diabetes, along with cardiovascular disease, which is the principal cause of death in these patients. To mention a few, in the WESDR (Wisconsin Epidemiological Study of Retinopathy) Study it was statistically proven that the risk of progression to diabetic retinopathy was associated with levels of glycosylated hemoglobin (HbA1c) above 8%. In this

same study, glycemic control was related to macroscopic proteinuria, neuropathy and amputation (Klien, 1998). In the UKPDS (United Kingdom Prospective Diabetes Study) Study it was established that nephropathy, and possibly neuropathy, are reduced by 25% when keeping HbA1c below 7%. This study established that for every 1% that HbA1c is reduced, there is a 35% global reduction in the risk of microvascular complications (UKPDS, 1998).

In the same manner, glycemic control has been related to macrovascular complications, principally aterosclerosis, isquemic cardiopathy and cerebral vascular events, as demonstrated by the DCCT, where a 34% risk reduction ($p<0.05$) for hypercholesterolemia was found using a strict glycemic control.

On the other hand, is has been possible to determine which factors are implicated in the risk of developing DM and presenting complications, among then the risk of death. For example,. In the prospective study of the University of Munster, Germany (PROCAM), it was found that the principal complications of diabetes and the risk of death were directly related to glucose levels. Also, it was possible to identify the relative risk of developing DM (in order of their frequency): fasting glucose levels, Body Mass Index (BMI), family history of DM, age, systolic and diastolic blood pressure, triglycerides, HDL and uric acid, which coincide with findings in other studies. The DM prevalence in this study was 0.85%, in comparison with other populations with a high DM prevalence (Mexican Americans 1.5%, Pima Indians 3.6%), and after a multivariate analysis, it was determined that only glucose, BMI, hypertension, low HDL levels and family history of DM were independent risk factors for DM (Eckardestein, 2001).

The stages of the NH are important for considering and modifying prevention and control actions. In the case of DM2, they can help visualize the prevention potential to revert or reduce the risk of DM2. This has been seen in the Malmo study, were more than 50% of the patients with (impaired glucose tolerance) IGT were normalized, and close to 50% of recent-onset diabetics obtained a remission in their abnormal blood glucose levels.

Another example is the experiment where diabetic Australian Aborigines were returned to their natural habitat; they were allowed to hunt and fish animals with less than 10% saturated fat. After three months of this diet regimen, and an increase in physical activity, the subjects returned to normal glucose levels (O'Dea, 1984).

This tendency has also created talk about cases treated with certain medications, reverting the IGT, and partially reverting insulin resistance (Chiasson, 1996, 1998).

The NH of DM can guide primary care health professionals to create effective treatment regimens that modify the progress of the disease. In the pre-pathogenic period, the ADA has recommended the term "impaired fasting glucose" (IFT), defined as fasting glucose $>$110mg% and $<$126mg% (6.1-7mmol/L)(109-126mg/dL), a point in the middle of the continuum between normal glucose

tolerance and frank diabetes. This intolerance represents an accumulating risk, as a third of the IGT become diabetics. In the same sense, the ADA defines diabetes as the presence of clinical symptoms and/or fasting glucose ≥126mg/dL (≥7 mmol).

Even though there are still details that need to be fine-tuned in the consensus over "who" requires scrutinizing[1], it's well accepted that glucose intolerance is a risk factor for developing diabetes. We have to accept the fact that today DM2 is a growing public health problem that requires a proactive population focus. This implies, among other actions taken by the health professional team, a "translation research" effort to emphasize the need for a interdisciplinary bridge investigation between the epidemiological and clinical aspects. An example of this are the glycemic control studies, which show a 30% reduction in microvascular disease for every 1% reduction in Hb1Ac. This is reflected in the ADA recommended figures, relating a good control with <7% in the Hb1Ac (Venkat 2000)(UKPDS 1998).

To this effect, the *Unidad de Investigación Social, Epidemiológica y de Servicios de Salud* (UISESS) (Social, Epidemiological and Health Service Investigation Unit) has used a "Translation Research" focus to develop a scale based on the NH of the disease and on international and national technical norms. This scale manifests the advancement, recession or stagnation of the disease through staging, along with the risk level for complications or death, evidenced by the diachronic situation of the disease and the impact of integral attention given to a single patient or a group of patients, in an office, clinic or major circumscriptions.

Our objective was to create the UISESS Scale and give it a practical application at first level attention. A person or group of persons was classified by the DM2 stages, within the NH of the disease and according to the risk level, using the most accepted indicators and systemizing prevention strategies.

Material and Methods

The UISESS scale was our instrument to determine the clinical evolution of a patient or a group of studied patients. We established clinical-epidemiological stages, based on the model of the "NH of the disease". This was developed originally by Leavell and Clark (1965), and we adapted its periods and prevention levels to the five stages that form the UISESS scale (See Chart 1).

The stages correspond to the periods of the NH of the disease. Thus, in "stage 0", "non-diabetics" and undiagnosed DM2 patients are included, with or without risk

[1] The ADA does not recommend the routine use of glucose tolerance tests, while the WHO recommends a glucose tolerance curve in those subjects with glucose levels of 5.6-11.2 mmol/L and extends the definition of diabetes to glucose levels higher than 11.2 mmol/L two hours postprandial, and defines glucose intolerance with a glycemia of 7.8-11.2 mmol/L two hours after a glucose load. The comparison of ADA and WHO criteria shows different levels of agreement with respect to DM diagnosis and the diagnosis of the pre-diabetic stage. However, the spirit of both criteria is to take into account the DM evolution and reasonably prevent any eventuality.

factors, along with glucose intolerance. "Stage 0" corresponds to the pre-pathogenic period of the NH of the disease, where primary prevention actions are carried out.

For the pathogenic period of the NH of the disease, under the guise of secondary prevention, the following stages are considered:
"Stage I", where diabetic patients with controlled glucose levels, and without any other pathology or complication, are placed.
"Stage II", where uncontrolled diabetic patients, but without any other pathology or complication, are placed.
"Stage III", for controlled or uncontrolled diabetic patients with some other additional pathology.
"Stage IV", where we include diabetic patients with some typical complication of the disease.
As part of the pathogenic period, but under tertiary prevention, we used "Stage V" to place those diabetic patients with sequelae from DM2 complications or aggregated illnesses.

The UISESS scale includes a focus on risk, based principally on the criteria and indicators of clinical and metabolic control recommended by the ADA, the WHO and the *Norma Oficial Mexicana* (NOM) (Official Mexican Norms) for the prevention, diagnosis and control of DM2.

To measure the risk, the principal diabetes risk factors were taken into account, using a scale of 0 to 1 points to weigh their magnitude as macro factors The risk scale was assigned a summary character, so that a summary with a grade of 0 would be equal to very low risk and a summary of 3 or more points expressed high or very high risks, as shown in Table 2.

In order to apply the UISESS scale, the UMF (Unidad de Medicina Familiar) 93 of Tonalá, Jalisco, was chosen. This is a Family Medicine Clinic, belonging to the Instituto Mexicano del Seguro Social (IMSS), and located in the metropolitan area of Guadalajara. It attends 81,929 beneficiaries, most of them factory workers and low-income employees. A census of all the charts revealed that there were 2702 patients in the family practice service who had been diagnosed clinically and by the laboratory as type 2 diabetics (3.3% of all users).

To complement the investigation, a random and representative sample of the rest of the population was obtained. This consisted of 404 case histories of non-diabetic patients, giving a total of 3106 patients available for staging.

It should be mentioned that in all the cases the social and demographic information, and the pertinent data for the UISESS scale, was taken from the chart of each patient. This information was used to fill out registry forms, and then processed by computer, using the Epi Info 6.04 program.

Results

Table 1 is a schematic representation of the overlap between the NH of the disease, prevention levels and the UISESS scale. It should be observed that stage 0 principally corresponds to the pre-pathogenic period of the disease and to primary prevention actions. It also includes, from the pathogenic period, the opportune diagnosis of secondary prevention.

Stages I, II, III and IV of DM2 are located in the pathogenic period, with the corresponding actions of adequate treatment and damage limitation of secondary prevention.

Stage V of the UISESS scale was located in the pathogenic period, within the tertiary prevention actions.

Table # 1
Natural History of the Disease, Prevention Levels and UISESS Scale

<table>
<tr><td colspan="3">Pre-pathogenic Period</td><td colspan="5">Pathogenic Period</td></tr>
<tr><td colspan="3">Agent* -- Host**

*Type 2 Diabetes
** People with/without risk factors intolerants are included</td><td colspan="5">Complicated Patients

Uncontrolled Patients

Patients under control</td><td>Pacients with Sequelae</td></tr>
<tr><td colspan="3">Primary Prevention</td><td colspan="5">Secondary Prevention</td><td>Tertiary Prevention</td></tr>
<tr><td rowspan="2">Health Promotion</td><td rowspan="2">Health Education</td><td rowspan="2">Specific Protection</td><td rowspan="2">Oportune Diagnosis</td><td colspan="3" rowspan="2">Adequate Treatment</td><td rowspan="2">Damage Limitation</td><td colspan="3">Rehabilitation</td></tr>
<tr><td>Physical</td><td>Mental</td><td>Social</td></tr>
<tr><td colspan="9">UISESS SCALE</td></tr>
<tr><td colspan="9">STAGES</td></tr>
<tr><td colspan="4">0</td><td>I</td><td>II</td><td>III</td><td>IV</td><td colspan="3">V</td></tr>
</table>

Adapted from Leavell and Clark

Table 2 presents the UISESS scale with the values to determine risk in persons with and without diabetes. Note that the macro factors are placed in five groups (0 or1 point each one), and if the sum of the points obtained is zero, the risk is very low; one point indicates low risk, two points medium risk and more than three points or more high or very high risk.

Table # 2
UISESS Scale to Stage and Classify Risk in Persons with and without type 2 Diabetes

RISK FACTOR	MACRO FACTORS	VALUE Positive =1 Negative = 0)
Be Hispanic, Native American, Asian-American, African-American or Pacific Islander Direct relatives with DM2 Birth weight < 2,500 gr.	Biographical	
Poverty (annual income <1000$US) No social support Sedentary life style Tobacco / Alcohol use Fatty diet	Social	
Age > 50 Body Mass Index (Kg /m^2) >25 Waist / Index (cms) >90 Blood Pressure >120 /80mm Hg Multiparity	Biological	
History of Gestational Diabetes History of Children > 4, 000 gr. Polycystic ovaries Hiperuricemia or gout Hypertension Micro -Albuminuria (positive en two occasions) Obesity	Co morbidities	
Chronic depression or anxiety Chronic Stress External Locus of Control	Psychological	
Fasting glucose > 110mg/dl Postprandial glucose >140mg/dl HbA1c >7% Total colesterol >200 mg /dl HDL colesterol <35 mg/dl LDL colesterol >130 mg/dl Triglicerides >150 mg/dl	Metabolic Control	

Table 3 shows the studied patients. Women formed a little more than half the sample, the average age of the group was 57 years, and the age at diagnosis was 49 years. Seventy-seven percent of the people were married, their average schooling was 4 years, and the average body mass index of the group indicated they were overweight.

Table #3
General Characteristics of the 2702 studied diabetics

Sex	58% Women 42% Men
Average age	57.6 years +/- 12.14
Age diagnosed	49 years +/- 11.8
Marital status	Married 77% Widowed 11% Divorced 6% Single 4% Separated 2%
Average schooling Distribution by Level	4 years +/-4.4 Analphabetic 26% Incomplete primary level 61% Primary level or more 13%
Body Mass Index	29 +/- 10.2

Source: census of case charts

Table 4 shows the studied population with respect to their average fasting glucose levels and cholesterol. They present a fair control according to ADA parameters, but their triglyceride levels indicate a poor control.

Table # 4
Some Metabolic Characteristics of the 2702 studied diabetics

Fasting Glycemia	185.5mg/dl +/- 82.5
Urea	32.8 mg/dl +/- 18.7
Cholesterol	208 mg/dl +/- 52.0
Triglycerides	280 mg/dl +/- 233
Creatinine	1.7 mg/dl +/- 1.3

Source: Census of case charts

In Table 5, it can be observed that two of every three subjects in Stage 0 present high risk, and that 78% of the patients are located in Stages II and III. Only Stage I presents a lower percentage level of high and very high risk, and the rest of the stages (most of all Stage IV) have high levels of high and very high risk.

Table # 5
UISESS Scale, Percentage Distribution of Stages and Risks Detected in 3106 charts of persons studied. 2702 of the diabetics are included

UISESS STAGE			RISK		
	% total n= 3106	% adjusted n= 2702	VERY LOW & LOW	MEDIUM	HIGH & VERY HIGH
0	23%	-----	7%	25%	68%
I	11%	14%	48%	30%	22%
II	26%	34%	6%	29%	65%
III	34%	44%	10%	20%	70%
IV	5%	6%	3%	5%	92%
V	1%	1%	8%	17%	75%
Average			14%	21%	65%

Source: Census and sampling of case charts

Table #6 contains the correlation between the prevention levels, UISESS Scale and observable preventative behavior both in the host and in the health team.

Table # 6
PREVENTION LEVELS, UISESS SCALE AND PREVENTATIVE BEHAVIORS

<table>
<tr><td colspan="3">PRIMARY PREVENTION</td><td colspan="3">SECONDARY PREVENTION</td><td>TERTIARY PREVENTION</td></tr>
<tr><td>Health Promotion</td><td>Health Education</td><td>Specific Protection</td><td>Opportune Diagnosis</td><td>Opportune Treatment</td><td>Damage Limitation</td><td>Physical
Mental
Social
Rehabilitation</td></tr>
<tr><td colspan="7">STAGES</td></tr>
<tr><td colspan="3">0</td><td>I II III</td><td>IV</td><td>V</td></tr>
<tr><td colspan="7">PREVENTATIVE BEHAVIOR INTHE HOST</td></tr>
<tr><td colspan="2">Actively participate in health programs
Adequately receive promotional information
Adopt good habits of nutrition, exercise and mental health</td><td>Actively look for information
Adopt efficient hygienic habits</td><td>Periodic office visits
Correct perception of symptoms
Look for competent help
Adopt the role of a diabetic
Adjust to the attention system</td><td colspan="2">Preventative reduction of complications and sequelae
Co-operate with new treatments</td><td>Adapt to a new identity and work with residual capabilities.</td></tr>
<tr><td colspan="7">PREVENTATIVE BEHAVIOR IN THE HEALTH TEAM</td></tr>
<tr><td colspan="2">Transmit information through adequate channels on general measures of promotion, exercise, nutrition and mental health</td><td>Provide mediums to adopt specific measures at the following levels:
Hygienic
Nutritional
Mental Health
Risk factors</td><td>Obtain sufficient and reliable information from patient
Show cordiality
Inspire trust
Firm attitude with patient and family, without being dominating, passive or joking
Act according to one’s professional role
Programming with participation</td><td colspan="2">Psychological support
Social Work support
Offer possibilities of recovery</td><td>Help create a new identity for the patient and family
Patient re-training</td></tr>
</table>

Table #7 summarizes the principal sanitary action strategies, according to the UISESS Scale stages.

Table # 7
UISESS SCALE AND ACTION STRATEGIES

ACTION	**UISESS Scale**					
	Stage 0	**Stage I**	**Stage II**	**Stage III**	**Stage IV**	**Stage V**
Health Promotion and Education	Healthy Life-style Promotion School for Patients' Children	Identity as a diabetic Health Education	Self-control	Integral Management	Limitation of Damage	Bio-psycho-social rehabilitation New Identity
Prevention	Opportune Detection and Promotion of Protecting Factors	Strengthening of Support Networks	Risk Reduction	Opportune Detection of Problems	Sequelae Limitation	Vital discapacity
Disciplinary management	Nutrition Physical Education Psychology	Multi-disciplinary programs	Glycemic control and Risks	Comprehensive and discussed management	Multi-disciplinary damage control	Special management
Watchfulness	Community Risk and Protection Factors	Personal Protection Factors	Personal Protection Factors	Integral Risk	Damage Control	Bio-psycho-social limitation

Commentary

The need for intensive treatment to reduce glucose levels and to reduce the risk of death and microvascular complications in the diabetic patient has been reiterated in the principal prospective studies done to date. (Donahue, 1987, DCCT, 1993, Henefeld, 1996).

Glycosylated hemoglobin (HbA1c) averages in the population of 8 to 9% and of 7 – 9% in countries such as the U.S.A. and England respectively (Klein.1988) have confirmed the need to complement the existing Cross sectional criteria and work with criteria with a more longitudinal focus on glycemic control. This should be both at a clinical level for the patient and at a group or population level from an

epidemiological point of view, that is, more adequate criteria for a prospective focus on health (Jenicek, 1993).

The incorporation of tests such as HbA1c to DM2 control criteria and the growing number of publications on studies referring to the natural history of diabetes to contextualize it in defined time and space, along with early diagnosis of the disease, form an indispensable part of its management and control (Perry, NOM, ADA 2002) and re-enforce the need to look at diabetes as a dynamic and specific process during primary attention.

Traditionally the Cross sectional criteria for risk and the diachronic focus of the natural history of the disease are limited to staging DM2 in three basic stages: people with risk factors but with normal glucose tolerance; glucose-intolerant people (fasting or post-prandial); and those with established DM2 (Perry, 2001).

In our case, the UISESS Scale takes into account said basic stages, separating the referent to the diabetic patient and also adding the risk level in which the DM2 individuals or groups are located. This permits comparisons and also allows for the evaluation of the impact of control actions that are so important today, given the economic and social impact that this metabolic disorder implies for our societies. (Rull,. 2000)

Therefore, in our results we have found a group of type 2 diabetic patients which shares common characteristics with other groups of diabetic patients that are cared for at a family medicine level. They are adults, principally female, are in their fourth decade of life, are overweight and have a fair to poor metabolic control (xxx)(ADA, 2002).

To this effect, when the UISESS Scale was applied to stage and determine risks in DM2, it was obvious that the majority of the diabetics in the study group (85%) are located in unfavorable stages as patients: with frank lack of control (stage II), with co-morbidity (stage III) or with complications (stage IV). These indicate the difficult situation that health services suffer when taking on the formidable task of controlling diabetic patients. However, knowing and systemizing the location of these subgroups (and also of individual patients according to their risk) in the UISESS Scale, and correlating stages with prevention levels, we are in a position to carry out specific preventative actions, avoiding *tabula rasa* with our care of DM2 patients. This also favors assertive decision-making by the health team, the establishment of appropriate policies by health team directives, and a shared agreement with the patients for their adequate control, as suggested by tables 6 and 7, where the differential preventative measures are mentioned, by stage, discipline and patient.

We think that the comparative analysis of the stages and risks of a population permits the establishment of specific action objectives. For example, in the case of the family medicine unit we studied, the stage structure of its diabetic population should be modified, which in turn would modify the percentages that were found, trying to increase the number of controlled cases in stage I (Black,2002), based on the reduction of the number of cases located in stages II and III. In this last stage, the existing co-morbidity should be eliminated as much as possible, independently of the fact that in all the stages the majority of patients should be located in minimum risk categories.

We also consider that the UISESS scale would permit an effective epidemiological vigilance of DM2, determining for various times and places:
1. Minimum and maximum levels for each stage. For example, even though stage 3 would always have a non-reducible level of co-morbidity, as in the cases of hypertension and hyperuricemia, these cases could be somewhat controlled and their risk level minimally reduced.
2. The speed of change from one stage to another, for example, to require a certain time to pass from stage 1 or stage 2 to stage 4, or from 4 to 5.
3. Probabilities of returning to a lower stage, for example, from stage 2 to stage 1, and…stage 1 to stage 0?

Conclusions

The UISESS scale is a tool/guide, created in our unit, which shows the distribution, evolution and control situation in groups of DM2 patients.

According to the applied UISESS scale, the greater part of studied patients are located in unfavorable stages for a controlled evolution of DM2.

The UISESS scale can facilitate a quick evaluation and specific attention planning in family-practice diabetic patients, with clinical and epidemiological applications.

The UISESS scale would favor the systematization of objective preventative actions, adopted both by the patient and by the members of the different disciplines of the health team.

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Attention of: Lauren Coartney
(covering for Anne Hedgecock)

Dear Sir.

We re -send the present manuscript titled
"**UISESS Scale for staging and classifying the clinical - epidemiological risk in type 2 diabetes mellitus and for establishing multidisciplinary preventive actions**",
for your consideration.
The manuscript shows a potentially useful toll in preventive medicine and public health that integrates the concepts of "Natural History of the Disease" and Risk of being a type 2 diabetes mellitus patient.
For this effect we are illustrating it use with a descriptive study that also shows its application in a family clinic of medicine.
This manuscript has not been published or is in under consideration for its publication elsewhere and its submission for publication. And has been approved by all of the autors and by the institution where the work was carried out.

Sincerely

Guadalajara, 4 of March 2004

Javier E García de Alba . M:D

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