2020 ESPEN Virtual CONGRESS

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Medical Nutrition International Industry

ESPEN-ONCA-MNI Joint Session: MNI Grant 2020 winner

Hospital Universitario La Paz

Identification of the most effective and fastest tool for nutritional diagnosis (SGA, GLIM, CIE-10 coding using NSA) in hospitalized patients.





Identification of the most effective and fastest tool for nutritional diagnosis (SGA, GLIM and ICDE-10 coding using NSA) in hospitalized patients

Hospital Universitario La Paz
Hospital de Cantoblanco
Hospital Carlos III
SaludMadrid
Comunidad de Madrid

IdiPAZ Instituto de Investigación Hospital Universitario La Paz

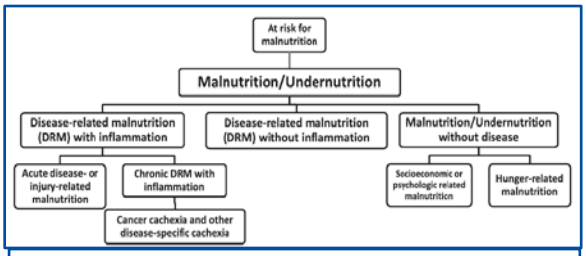
UAM UNIVERSIDAD AUTONOMA DE MADRID

NUTRInvest Grupo de Investigación en Nutrición y Alimentos Funcionales

Profa Dra Carmen Gómez Candela, MD, PhD
(Endocrinologist and Nutrition expert)
Head of Clinical Nutrition Department and
Nutrition and Functional Food Research Group
NUTRINVEST.
Hospital U La Paz .Health Research Institute IdiPAZ.
Universidad Autónoma de Madrid. UNED. Spain.
email: cgcandela@salud.madrid.org.
Phone number: +34 917277203

RATIONALE

- There is controversy over what is the best way to screen and diagnose disease-related malnutrition (DRM).
- Various approaches based on biochemical parameters + clinical + body composition have been used in recent years.



DRM is a very complex clinical condition, in which the inflammatory cause, chronicity and severity are difficult to measure

Global Subjective Assessment (SGA/Nutritional Status Assessment

International Classification of Diseases 10th edition (ICD-10)

Global Leadership Initiative on Malnutrition (GLIM)

More accurate?

Less time consuming?

Gold standard?

This project is focused on discerning if there is concordance among different validated diagnostic strategies used in clinical practice and the new GLIM Criteria.

✓ **An effective diagnosis will lead to a better and more individualized treatment and codification.**

Identification of the most effective and fastest tool for nutritional diagnosis (VGS, GLIM, CIE-10 coding using NSA) in hospitalized patients.

OBJECTIVES

Main objective

To estimate the degree of concordance of nutritional diagnosis among the criteria proposed by the Global Leadership Initiative Malnutrition (GLIM), the Global Subjective Assessment (SGA) and the International Classification of Diseases 10th edition (ICD-10) based on the nutritional status assessment (NSA)

Secondary Objectives

- To carry out a general description of all the parameters studied and the nutritional treatment indicated.
- To estimate the predictive value of malnutrition of the screening method (**CONUT)** with respect to the different strategies of nutritional assessment and review the adequacy of the current cut-off points.
- To estimate which is the **best way to measure muscle mass** / function for routine clinical practice.
- To define possible relevant **biochemical parameters** that contribute to improving the diagnosis of malnutrition (albumin, prealbumin, protein C, etc.).

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SGA take into consideration :

- Weight change
- Dietary intake
- Gastrointestinal symptoms
- Functional capacity
- Nutritional requirements related to disease
- Basic physical examination

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What is Subjective Global Assessment of Nutritional Status?

ALLAN S. DETSKY, M.D., PH.D., JOHN R. MCLAUGHLIN, M.SC., JEFFREY P. BAKER, M.D., NANCY JOHNSTON, B.SC.N., SCOTT WHITTAKER, M.D., RENA A. MENDELSON, SC.D., AND KHURSHEED N. JEEJEEBHOY, M.B.B.S.

TABLE 1
Features of subjective global assessment (SGA)

(Select appropriate category with a checkmark, or enter numerical value where indicated by "#.")

A. History
1. Weight change
Overall loss in past 6 months: amount = # _____kg; % loss = # _____
Change in past 2 weeks: _____increase, _____no change, _____decrease.
2. Dietary intake change (relative to normal)
_____No change,
_____Change _____duration = # _____weeks.
_____type: _____suboptimal solid diet, _____full liquid diet
_____hypocaloric liquids, _____starvation.
3. Gastrointestinal symptoms (that persisted for >2 weeks)
_____none, _____nausea, _____vomiting, _____diarrhea, _____anorexia.
4. Functional capacity
_____No dysfunction (e.g., full capacity),
_____Dysfunction _____duration = # _____weeks.
_____type: _____working suboptimally,
_____ambulatory,
_____bedridden.
5. Disease and its relation to nutritional requirements
Primary diagnosis (specify) _____
Metabolic demand (stress): _____no stress, _____low stress,
_____moderate stress, _____high stress.
B. Physical (for each trait specify: 0 = normal, 1+ = mild, 2+ = moderate, 3+ = severe).
_____loss of subcutaneous fat (triceps, chest)
_____muscle wasting (quadriceps, deltoids)
_____ankle edema
_____sacral edema
_____ascites
C. SGA rating (select one)
_____A = Well nourished
_____B = Moderately (or suspected of being) malnourished
_____C = Severely malnourished

Identification of the most effective and fastest tool for nutritional diagnosis (VGS, GLIM, CIE-10 coding using NSA) in hospitalized patients.

Main objective: to improve our clinical practice

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Nutrición Hospitalaria
Nutr Hosp. 2015;31(Supl. 3):196-208
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S.V.R. 318

Assessment of nutritional status in the healthcare setting in Spain

Rocío Campos del Portillo[1], Samara Palma Milla[1], Natalia García Váquez[2], Bricia Plaza López[1], Laura Bermejo López[1], Pilar Riobó Serván[3], Pedro Pablo García-Luna[4] and Carmen Gómez-Candela[1]

Table IV
Nutritional Status Assessment (NSA)

Anthropometry	• Current weight, normal weight, ideal weight and adjusted weight • Weight loss in the last 6 months (% weight loss) • Height • BMI • Triceps skin fold and upper arm muscle circumference
Physical examination	• Loss of subcutaneous fat • Loss of muscle mass • Presence of edema or ascites
Oral intake	• Changes in oral intake: increase, decrease or no change • Duration in time of changes in the oral intake • Type of Intake: fasting, low calorie liquid diet, full liquid diet, insufficient solid diet
Gastrointestinal symptoms	• Absence of symptoms • Nausea, vomiting, diarrhea, anorexia, dysphagia, other symptoms...
Stress	• No stress • Stress: mild - moderate - severe
Biochemestry	• Lymphocytes, albumin, other…
Dynamometry	• Normal values vary with age and sex (Male > 30kg, Women> 20kg)

ICD-10 is the 10th revision of the International Statistical Classification of Diseases and Related Health Problems , by the World Health Organization (WHO)

After the evaluation we have to perform a diagnosis according to ICD-10

- ICD-10-CM Type and Degree
- E40 Kwashiorkor
- E41 Nutritional marasmus
- E42 Marasmic kwashiorkor
- E43 Unspecified severe protein-calorie malnutrition
- E44 Protein-calorie malnutrition of moderate and mild degree
  - E44.0 Moderate protein-calorie malnutrition
  - E44.1 Mild protein-calorie malnutrition
- E45 Retarded development following protein-calorie malnutrition
- E46 Unspecified protein-calorie malnutrition

We need an expert staff and it takes about one hour per patient.

Main objective

GLIM

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Contents lists available at ScienceDirect

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journal homepage: http://www.elsevier.com/locate/clnu

ESPEN Endorsed Recommendation

GLIM criteria for the diagnosis of malnutrition – A consensus report from the global clinical nutrition community☆

ASPEN
ESPEN
FELANPE
PENSA

But is it really so easy to perform?

The recent publication of the GLIM Criteria (Global Leadership Initiative on Malnutrition) proposes a short and easy-to-use criteria for the diagnosis of malnutrition.

Cederholm T, et al. Clinical Nutrition.2018

Risk screening

At risk for malnutrition
- Use validated screening tools

Diagnostic Assessment

Assessment criteria
- **Phenotypic**
  - Non-volitional weight loss
  - Low body mass index
  - Reduced muscle mass
- **Etiologic**
  - Reduced food intake or assimilation
  - Disease burden/inflammatory condition

Diagnosis

Meets criteria for malnutrition diagnosis
- Requires at least 1 Phenotypic criterion and 1 Etiologic criterion

Severity Grading

Determine severity of malnutrition
- Severity determined based on Phenotypic criterion

Table 3
Phenotypic and etiologic criteria for the diagnosis of malnutrition.

Phenotypic Criteria[a]			Etiologic Criteria[a]	
Weight loss (%)	Low body mass index (kg/m^2)	Reduced muscle mass[a]	Reduced food intake or assimilation[b,c]	Inflammation[d–f]
>5% within past 6 months, or >10% beyond 6 months	<20 if < 70 years, or <22 if >70 years Asia: <18.5 if < 70 years, or <20 if >70 years	Reduced by validated body composition measuring techniques[a]	≤50% of ER > 1 week, or any reduction for >2 weeks, or any chronic GI condition that adversely impacts food assimilation or absorption[b,c]	Acute disease/injury[d,f] or chronic disease-related[e,f]

Table 4
Thresholds for severity grading of malnutrition into Stage 1 (Moderate) and Stage 2 (Severe) malnutrition.

	Phenotypic Criteria[a]		
	Weight loss (%)	Low body mass index (kg/m^2)[b]	Reduced muscle mass[c]
Stage 1/Moderate Malnutrition (Requires 1 phenotypic criterion that meets this grade)	5–10% within the past 6 mo, or 10–20% beyond 6 mo	<20 if < 70 yr, <22 if ≥ 70 yr	Mild to moderate deficit (per validated assessment methods – see below)
Stage 2/Severe Malnutrition (Requires 1 phenotypic criterion that meets this grade)	>10% within the past 6 mo, or >20% beyond 6 mo	<18.5 if < 70 yr, <20 if ≥ 70 yr	Severe deficit (per validated assessment methods – see below)

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Secondary Objectives

Screening Method Nutritional Control (CONUT) :
automatic screening system based on measuring 3 biochemical parameters

Nutr. Hosp. vol.28 no.6 Madrid nov./dic. 2013

Complete process of implantation of a nutritional risk screening system in the university hospital La Paz. Madrid. 2010

Tabla I
Grado de alerta nutricional CONUT según los niveles de los parámetros analíticos

	Niveles de los parámetros			
		Con déficit		
Parámetros	*Sin déficit*	*Leve*	*Moderado*	*Grave*
Albúmina Sérica g/dL	≥3.50	3.00-3.49	2.50-2.99	<2.50
(Puntuación)	(0)	(2)	(4)	(6)
Linfocitos totales cel./mL.	≥1600	1200-1599	800-1199	<800
(Puntuación)	(0)	(1)	(2)	(3)
Colesterol Total mg/dL	≥180	140-179	100-139	<100
(Puntuación)	(0)	(1)	(2)	(3)
	Interpretación			
Puntuación total	0-4	5-8	9-12	
Alerta de Desnutrición	Baja	Moderada	Alta	

[Nutr Hosp 2020;37(4):799-806]

Comparación del método CONUT con la VGS y el VEN para la predicción de complicaciones, estancia hospitalaria, readmisiones y mortalidad

Comparison of the CONUT method with SGA and NSA for the prediction of complications, hospital stay, readmissions, and mortality

María Natalia García-Vázquez[1], Samara Palma Milla[2,4], Bricia López-Plaza[3], Marilyn Valero-Pérez[2], Marina Morato-Martínez[2] y Carmen Gómez-Candela[2,3,4]

CONUT is a suitable tool as a method of malnutrition risk screening that also offers the advantage of being a prognostic factor of complications, rates of hospital re-entry and mortality

Identification of the most effective and fastest tool for nutritional diagnosis (VGS, GLIM, CIE-10 coding using NSA) in hospitalized patients.

Secondary Objectives

Cut-off points?

percentil?

Which is the best way to measure muscle mass / function for routine clinical practice

✓ Muscle function *(grip strength) ?*

✓ Muscle mass?





Mid-arm muscle circumference



Calf circumference

Table 2. Examples of Recommended Thresholds for Reduced Muscle Mass.

	Males	Females
Appendicular Skeletal Muscle Index (ASMI, kg/m^2)[15]	<7.26	<5.25
ASMI, (kg/m^2)[24,a]	<7	<6
ASMI, (kg/m^2)[17,b]		
DXA	<7	<5.4
BIA	<7	<5.7
Fat free mass index (FFMI, kg/m^2)[8]	<17	<15
Appendicular lean mass (ALM, kg)[25]	<21.4	<14.1
Appendicular lean mass adjusted for BMI = ALM/BMI[26]	<0.725	<0.591

sarcopenia



Electrical bioimpedance



Muscle ecography

?

Appendicular Skeletal Muscle Index (ASMI)

PLANNED ACTIVITIES & DELIVERABLES

- It is a cross-sectional observational study
- We will study around 1000 patients admitted to the Clinical Nutrition Department of La Paz University Hospital
- The total period of the study will be two years but we've been collecting data for months now.
- The whole multidisciplinary clinical nutrition team is involved in this study.
- With the approval of our Ethical Committee
- We have the collaboration of an expert company in statistical analysis (hundreds of parameters):
  Biostatech, Advice, Training & Innovation in Biostatistics, S.L.







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PLANNED ACTIVITIES & DELIVERABLES

All activities are scheduled and we have almost all devices

- ✓ **Clinical and dietetic information** *(medical diagnosis, diabetes, dysphagia, food intake and assimilation)*
- ✓ **Anthropometrical data** (*weight, height, BMI, weight loss, mid arm muscle circumference, calf circumference…)*
- ✓ **Muscle function** *(grip strength)*
- ✓ **Electrical bioimpedance** *(PA, TBW, ECW, ICW, %FM, ASMI…)*
- ✓ **Biochemical parameters** *(albumin, prealbumin, PCR)*
- ✓ **Nutritional risk** according to the nutritional tool for controlling nutritional status *(CONUT).*
- ✓ **Nutritional Diagnosis** according to GLIM criteria, SGA and NSA
- ✓ **Nutritional treatment**







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RESULTS/OUTCOMES & EXPECTED IMPACT

Innovative

GLIM criteria has been published recently but there is not enough feedback studies about their reliability and concordance with other clinical practice strategies.

If concordance is identified, GLIM Criteria, along with the best measures and parameters, would be implemented in our daily hospital practice in the future

Because we need an easy, concise, reproducible and and non-excessive time-consuming methodology to diagnose malnutrition in hospitals.

Identification of the most effective and fastest tool for nutritional diagnosis (VGS, GLIM, CIE-10 coding using NSA) in hospitalized patients.

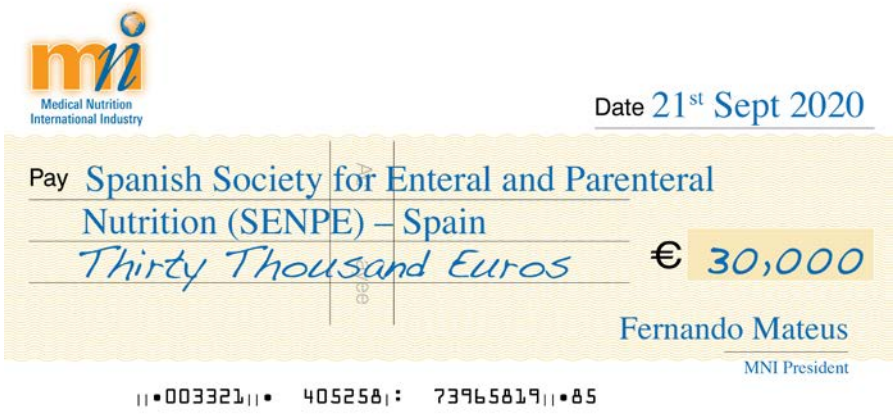
RESULTS/OUTCOMES & EXPECTED IMPACT

We will publish the scientific results

Influence national nutrition policy, prompting to review, and update the existing national clinical practice guidelines.

Transferable to other countries as the malnutrition diagnostic methodologies we use are international.

RESULTS/OUTCOMES & EXPECTED IMPACT



Identification of the most effective and fastest tool for nutritional diagnosis (VGS, GLIM, CIE-10 coding using NSA) in hospitalized patients.

THANK YOU FOR CHOOSING US AND BE SURE THAT WE WILL DO OUR BEST

email: cgcandela@salud.madrid.org
Phone number: +34 917277203