Symposium **Abstract Book**

Satellite Symposium:

Maximizing Nutrient Intake for Improving Clinical Outcomes in Disease-Related Malnutrition

46th Congress on Clinical Nutrition and Metabolism (ESPEN)
9 September 2024

Nestlé HealthScience

Dr. Anette Järvi, PhD, RDN
Global Head of Medical Affairs. Nestlé Health Science

Welcome

The presence of chronic health conditions or co-morbidities can render individuals more susceptible to disease-related malnutrition. Malnutrition, whether associated with age or underlying diseases, poses a significant risk factor for functional decline, increased morbidity and mortality, reduced quality of life, prolonged hospital stays, and escalated healthcare costs. Patients with or at risk of malnutrition malnutrition often struggle to meet their energy, protein, and micronutrient requirements through diet alone, necessitating the use of nutritional support as recommended by professional expert societies.

At Nestlé Health Science, we firmly believe in the transformative power of nutrition to positively impact people's health and quality of life. To further advance this approach, we work collaboratively with experts, healthcare healthcare professionals, scientific societies, and institutions through meaningful scientific partnerships. By working together, we aim to improve the health and wellness of patients, enabling them to reach their full potential and enhance their overall well-being.

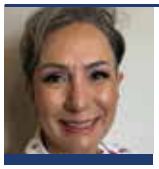
I am confident that our collective efforts and collaboration will pave the way for better and faster recovery, improved patient outcomes, and a brighter future for those affected by disease-related malnutrition. Additionally, our innovations will assist healthcare professionals in their day-to-day clinical practice, providing them with valuable resources to enhance patient care.

Agenda

Introduction

Chair: Prof Alessandro Laviano, MD, PhD

Head of Clinical Nutrition Unit of the Sapienza University Hospital Sant'Andrea, Rome, Italy.



Balancing Energy and Protein Utilization for Optimal Health Outcomes

Prof Maria Isabel Correia, MD, PhD

Retired Prof. of Surgery, Universidade Federal of Minas Gerais, and Coordinator of ETERNA - Rede Mater Dei and Hospital Semper, Belo Horizonte, Minas Gerais, Brazil.

Optimizing Amino Acids and Protein for Musculoskeletal Health during Periods of Rest or Disuse

Prof Stuart Phillips, PhD, FACSM, FCAHS

Professor & Tier 1 Canada Research Chair Director, Physical Activity Centre of Excellence (PACE), McMaster University, Ontario, Canada.

Advancing the Management by Applying Evidence-Based Approaches through High Energy Protein-Dense Oral Nutritional Supplements

Prof Philipp Schütz, MD, PhD

Head of Medicine, Endocrinology & Clinical Nutrition, Kantonsspital Aarau, Aarau, Switzerland.

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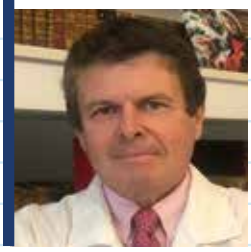

Professor Alessandro Laviano, MD, PhD
Head of Clinical Nutrition Unit of the Sapienza University Hospital Sant'Andrea, Rome, Italy.

Introduction

Speaker biography

Prof. Alessandro Laviano, MD, is associate professor of Internal Medicine at the Department of Translational and Precision Medicine, Sapienza University of Rome, Italy. He is Chief of the Clinical Nutrition Unit at Sant'Andrea University Hospital in Rome.

With a strong focus on disease-associated malnutrition, particularly cancer anorexia-cachexia, Prof. Laviano is dedicated to researching and developing strategies for the prevention and treatment of these conditions. In recent years, he has expanded his research scope to include the impact of biological aging in the pathogenesis of sarcopenia, and the development of nutritional strategies to reduce accelerated aging and favour healthy aging.

Prof Laviano has played integral roles within the central committees of the European Society for Clinical Nutrition and Metabolism (ESPEN) over the past decade. Currently, he serves as the Director of the ESPEN LLL program, the Coordinator of the Supervisory Board of the nutritionDay project, and the Coordinator of the ESPEN Cancer Task Force.

In addition to his leadership roles, Prof. Laviano holds prestigious editorial positions. He serves as the Editor-in-Chief of Nutrition and is an Associate Editor of the Journal of Cachexia, Sarcopenia and Muscle.

Prof. Laviano's contributions to the field of nutrition and clinical research are highly regarded, evident in his extensive publication record. He has authored over 320 publications in international peer-reviewed journals, as documented by Scopus (accessed February 2024). His impactful research has garnered significant recognition, with an impressive H-index of 64 (source: Scopus, accessed February 2024).

Since 2019, Prof. Laviano has been honored as one of the top 2% all-time world scientists in the Stanford-Elsevier ranking list, further highlighting his exceptional contributions to the scientific community.

Prof. Alessandro Laviano's expertise, leadership, and dedication to advancing the understanding and treatment of disease-associated malnutrition and the impact of aging on health make him a highly respected and influential figure in the field of clinical nutrition and metabolism.

General

Google Scholar: https://scholar.google.com/citations?hl=en&user=PLUNVJ0AAAAJ

ResearchGate: https://www.researchgate.net/profile/Alessandro-Laviano

Abstract

When compared to the early 2000s, healthcare professionals are now facing more complex and more fragile patients. This epidemiological shift would require more attention to the patients' needs and early implementation of supportive care. Unfortunately, it appears that nutritional care is still largely overlooked and its use is delayed until it may be considered futile. In contrast with the general understanding of the role of nutritional care, new solid and robust publications, including the EFFORT trial, show that early integration of individualized nutrition support in patients at risk of malnutrition improves quality of life and survival. Then, why malnutrition remains the likely largest co-morbidity in patients suffering from acute and chronic diseases? Decades of nutritional research showed us that also in our field the „one-size-fits-all" approach does not yield nutritional benefits. Therefore, it is now essential to quantitatively and qualitatively balance protein and energy intakes to optimize their anabolic potential. Also, it is key to mitigate the metabolic barriers to anabolism, including inflammation. It is important to set realistic protein and caloric targets, paying more attention to where the patient starts rather than where he should arrive. In this respect, the informed and individualized use of oral nutritional supplements addresses most of the metabolic needs of the patients. The aim of this symposium is to provide the most recent evidence to inform and improve our „traditional" nutritional plans to optimize their anabolic potentials and provide a greater benefit to the patients.

Professor Maria Isabel Correia, MD, PhD

Retired Prof. of Surgery, Universidade Federal of Minas Gerais, and Coordinator of ETERNA - Rede Mater Dei and Hospital Semper, Belo Horizonte, Minas Gerais, Brazil.

Balancing Energy and Protein Utilization for Optimal Health Outcomes

Speaker biography

Prof Maria Isabel Toulson Davisson Correia, MD, obtained her medical degree from the prestigious Universidade Federal de Minas Gerais in Brazil. She completed her Master's in Sciences in Surgery at the Universidade Federal de Minas Gerais in 1999. She further pursued her academic journey and obtained a Ph.D. in Gastrointestinal Surgery from the Universidade de São Paulo in 2002. In 2007, she conducted post-doctoral research at the University of Pittsburgh in the United States, supported by a CAPES fellowship.

She has served as a retired professor of surgery at the Universidade Federal de Minas Gerais Medical School. She is also the head of the Nutrition Therapy Team at Rede Mater Dei and Hospital Semper.

Throughout her career, Prof. Correia has made significant contributions to the field of nutrition and surgery. She serves as the Deputy Editor-in-Chief for Nutrition and member of the editorial boards of prestigious journals such as Clinical Nutrition, JPEN (Journal of Parenteral and Enteral Nutrition), and NCP (Nutrition in Clinical Practice), President of the Brazilian Society of Parenteral and Enteral Nutrition for the term 2024/2025 and she is honorary member of the European Society for Clinical Nutrition and Metabolism.

Prof. Correia has authored over 232 publications in top international and national journals. Her research focuses on various aspects of general surgery and nutrition, with special emphasis on topics such as disease-related malnutrition, surgical, cancer, liver transplantation, metabolism, and specific nutrients like arginine, glutamine, citrulline, and probiotics.

Her research contributions continue to shape the understanding and practice of these disciplines, benefiting patients and healthcare professionals alike.

General

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ResearchGate:
https://www.researchgate.net/scientific-contributions/Maria-Isabel-Toulson-Davisson-Correia-15893434

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Abstract

Plato and Aristotle were certainly pioneers in emphasizing the importance of fire and earth as fundamental elements involved in the production of heat and energy. Centuries later, Dr. Ancel Keys demonstrated the essential role of energy balance in maintaining the nutritional status of healthy volunteers during the Minnesota Experiment in the mid-1940s[1]. However, it is important to once again go back in time and mention Antoine Lavoisier, who, at the behest of the King of France, conducted experiments to measure energy and protein requirements with the goal of improving nutrition for hospital patients. Much later, in the United States, Wilbur Atwater invented the first closed calorimeter, which significantly advanced the field of nutritional science. This invention facilitated the work of Drs. Francis G. Benedict and James A. Harris, who developed a formula that has been widely used in clinical practice for many years to estimate energy expenditure[2]. In the early 2000, the Food and Agriculture Organization published a report of a joint expert consultation on human energy requirements, which are those attaining and maintaining optimal health, physiological function and well-being[3]. A very recent publication by Drs. Heymsfield and Shapes provides guidance on energy and macronutrients across the lifespan[4]. The authors highlight the importance of a balanced intake of macronutrients, recommending an average daily intake for adults of 130g of carbohydrates, 0.8g/kg/day of protein, and fat constituting 20% to 35% of total energy intake. This aligns closely with most clinical guidelines, although higher protein content is often recommended under disease conditions.

Protein requirements have been a matter of high controversy since the reports that followed Lavoisier's studies, with a few authors recommending above 100g per day, while others defended much lower doses[5]. The higher protein recommendation prevailed, leading to the great protein fiasco of the mid-1950s[6]. However, in current clinical nutrition, there is still a significant debate among experts. Guidelines from recognized societies continue to delve into this discussion, with conflicting opinions.

Balancing energy requirements may remind us of similar controversies in physics from Newton's era up to Einstein's. Nonetheless, the topic must be discussed, as energy balance significantly impacts health outcomes. These outcomes are defined as events resulting from an intervention and may be measured clinically by physical examination, laboratory testing, imaging, or even self-reported or observed methods. To promote positive health outcomes, interventions must be adequate and based on sound scientific evidence.

Undoubtedly, the best current method for assessing energy requirements is indirect calorimetry. However, it is not available in the majority of institutions worldwide, necessitating the use of formulas. We have demonstrated that, after surgery, despite the significant physiological response to surgical stress, patients do not require more than 20

kcal/kg/day in the first five days[7]. A minor increase in energy requirement may be observed as a result of inflammation markers. In critically ill patients, the use of tailored nutrition therapy according to a tight calorimetry protocol, as shown in the TICACOS study, did not produce better outcomes. Nonetheless, this does not mean that indirect calorimetry should be abandoned, as the authors highlighted the study's difficulties [8].

Similarly, the controversy over the appropriate amount of protein has been discussed by several authors. Retrospective data indicate that a higher protein intake of about 1.5 g/kg/day increased survival in critical care patients[9], while other authors showed no advantage[10]. In the latter study, although a high prescribed amount of 2.2 g/kg/day was recommended, the patients ended up receiving only 1.6 g/kg/day. A recent large international database analysis of 12,930 patients concluded that protein intake does not appear to influence the duration of mechanical ventilation, but a standard protein intake may improve survival[11].

Amidst so many controversies, where does the individual patient stand? Under severe clinical conditions, self-cannibalism, autophagy, and metabolomic disorders occur, influencing overall energy requirements. Nutrition is not like an antibiotic but rather a mixture of many nutrients. It is of utmost importance to consider the uniqueness of each patient regarding sex, age, previous nutritional status, and body composition, as well as the disease and comorbidities, to plan an adequate individualized approach, which will eventually change across the treatment . Patients are not merely guidelines. Nutrition is part of the holistic approach, as evidenced by the fact that individuals who underwent fasting for political reasons, after six weeks, several died[12]. Conversely, nutrition therapy has been well documented to improve patient outcomes[13, 14].

In conclusion, we should heed Hippocrates' recommendations: "If we could give every individual the right amount of nourishment and exercise, not too little, not too much, we would have found the safest way to health, as everything in excess is opposed to nature." We ought to critically appraise the literature, as there is current evidence that beyond the controversies alone, there is also much to question regarding the scientific method [15], particularly in the field of nutrition.

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Professor Stuart Phillips, PhD, FACSM, FCAHS

Professor & Tier 1 Canada Research Chair Director, Physical Activity Centre of Excellence (PACE), McMaster University, Ontario, Canada.

Optimizing Amino Acids and Protein for Musculoskeletal Health during Periods of Rest or Disuse

Speaker biography

Prof. Stuart Phillips is a distinguished academic and researcher at McMaster University in Hamilton, Ontario, Canada. He has an impressive educational background, having earned a Bachelor of Science (BSc) degree and a Master of Science (MSc) degree from McMaster University. He further pursued his academic journey and obtained a Ph.D. from the University of Waterloo.

Currently, Prof. Phillips holds the esteemed position of Distinguished University Professor in the Department of Kinesiology at McMaster University. He also serves as the Tier 1 Canada Research Chair in Skeletal Muscle Health. In addition to these roles, he is the Director of the McMaster Centre for Nutrition, Exercise, and Health Research, located within the Faculty of Science. Prof. Phillips also serves as the Director of McMaster Physical Activity Centre of Excellence (PACE), which is also housed within the Faculty of Science.

Prof. Phillips is an esteemed member of the McMaster Institute for Research on Aging (MIRA) and the Centre for Metabolism, Obesity, and Diabetes Research (MODR) within the Faculty of Health Sciences. His extensive contributions to research are reflected in his impressive career citations, which exceed 31,000. He has authored over 400 original scientific research and review papers, further establishing his expertise and impact in his field.

The focus of Prof. Phillips' work revolves around the interaction of nutrition and exercise on human skeletal muscle protein turnover, as well as its impact on exercise, aging, and body composition. His research has significantly contributed to our understanding of skeletal muscle health and its implications for overall well-being. Prof. Phillips is recognized as a fellow of the American College of Sports Medicine (ACSM) and the Canadian Academy of Health Sciences (CAHS). Furthermore, his consistent presence in the top 1% of highly-cited scholars globally in the fields of nutrition and physiology for six consecutive years (2018-2023) attests to the impact and relevance of his research.

Prof. Stuart Phillips' significant contributions to the understanding of skeletal muscle health, exercise, aging, and nutrition have made him a respected authority in his field. His research has played a crucial role in advancing knowledge and improving human health and well-being.

General

Lab: https://goo.gl/k4x9Xv

Google Scholar: https://scholar.google.ca/citations?user=VLu9hqgAAAAJ&hl=en

Web of Science: https://www.webofscience.com/wos/author/record/B-2343-2009

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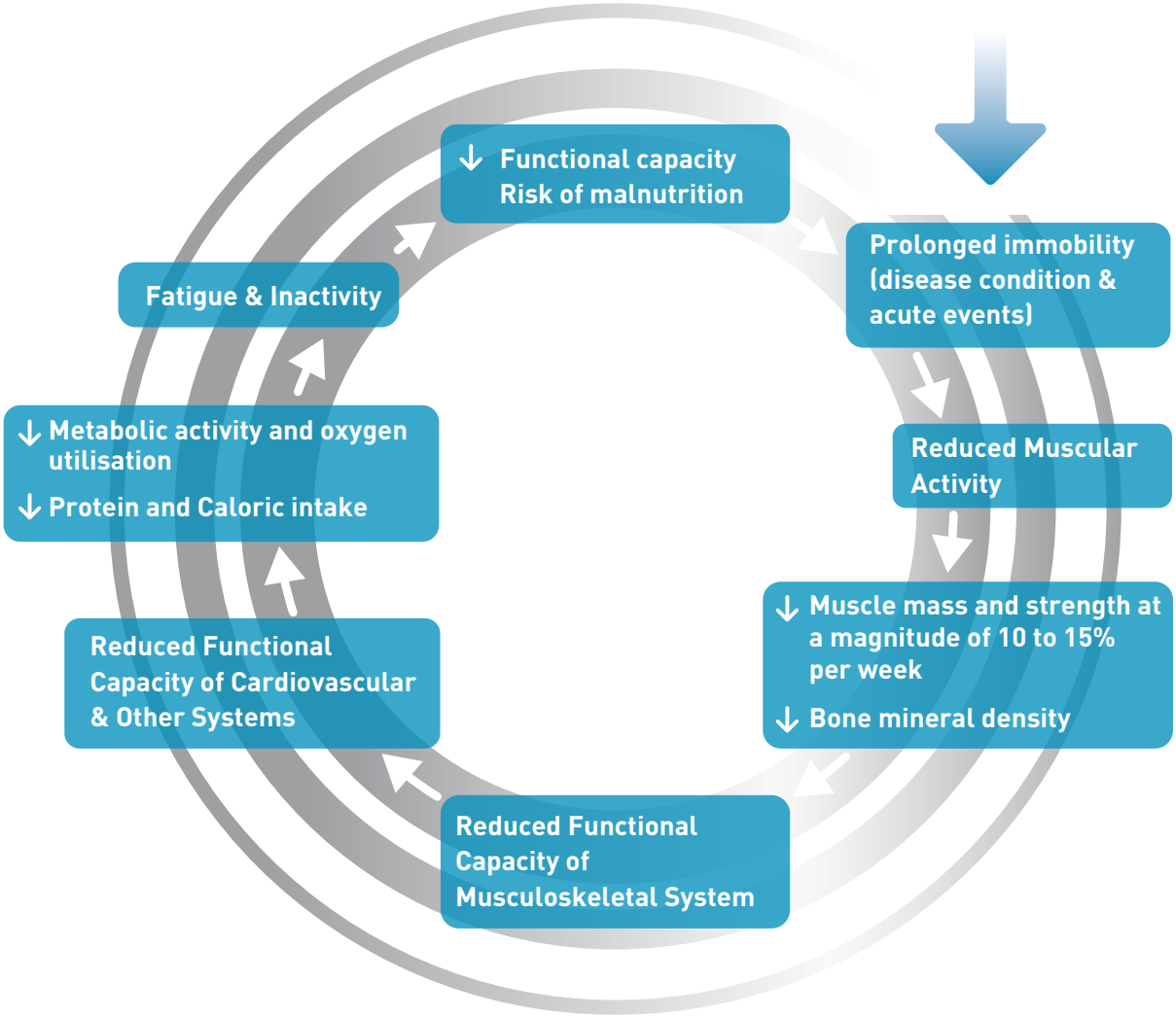
Abstract

Skeletal muscle disuse occurs in various scenarios, including bed rest for illness or limb immobilization[1]. Even a relative 'disuse' modelled experimentally using reduced daily steps results in similar adaptations, albeit on a slower scale[2]. Disuse is most problematic in older persons, especially those with chronic disease, overt malnutrition or undernutrition[3]. Disuse induces a marked perturbation to the processes that govern muscle protein turnover – muscle protein synthesis (MPS) and muscle protein breakdown (MPB). The disuse-induced removal of contractile stimulation of muscle results in a loss of amino acid sensitivity and a reduced stimulaiton of MPS, similar to the anabolic resistance of feeding[4]. The result is rapid deconditioning and loss of strength, muscle mass, and general worsening of metabolic regulation[3]. Combating these adverse disuse effects has been attempted with nutritional support with some success[5, 6]. The strategic mitigation of disuse atrophy requires a formulation with a balance of high-quality protein and energy to support an anabolic (anti-catabolic) state. An optimal approach to mitigating disuse-induced decline will require specific protein and amino acid formulations in combination with other nutritional supports, including adequate energy. The primary ingredients in any such formulation would include proteins with a high leucine content since leucine is the primary amino acid responsible for the stimulation of MPS[7]. There must also be, of course, all other essential amino acids (EAA) in abundance to support ongoing MPS. These sentiments are particularly true in persons with sarcopenia, for whom high-quality protein is of primary importance[8, 9]. There also needs to be a focus on the provision of sufficient energy so as to rive anabolism and support recory.

The main reason why we should attempt to aggressively support an older malnourished patient during a disuse event is because the loss of muscle is profound in these patients. Older persons may also be sarcopenic, which would exacerbate the loss of muscle[10]. We know that older people struggle to return to normal function after disuse, and often, muscle loss during these times represents a permanent loss, and the older patient is at risk of a downward spiral of events that is hard to mitigate. The illustration below shows the vicious cycle of how prolonged immobility and reduced muscle mass and function can become incapacitating.

MULTISYSTEMIC CONSEQUENCES OF PHYSICAL INACTIVITY ASSOCIATED WITH BED REST



The aim of my presentation is to present a review of the protein- and amino-acid-related supports that are core to the mitigation of disuse or even reduced activity-induced atrophy with an emphasis on older persons who may be at risk for malnutrition. Ideally, protein nutrition would induce a more rapid return to normal function and break the cycle of undernutrition/malnutrition and disuse-induced muscle loss and the downward spiral associated with such conditions.

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Professor Philipp Schütz, MD, PhD
Head of Medicine, Endocrinology & Clinical Nutrition, Kantonsspital Aarau, Switzerland

Evidence-Based Approaches through High Energy Protein-Dense Oral Nutritional Supplements

Speaker biography

Prof Philipp Schuetz, MD, studied Medicine at the University of Basel, Switzerland, and the University Kremlin Bicetre in Paris, France. With a strong passion for patient care and research, Prof. Schuetz has become a recognized expert in the fields of internal medicine, endocrinology, and clinical nutrition.

Currently, Prof. Schuetz holds the esteemed position of Director of the Medical University Clinic at Kantonsspital Aarau overseen 10 medical clinics. He serves as the Head of Internal Medicine for inpatient care and the head of Endocrinology for outpatient care. With a strong commitment to education and mentorship, he supervises and guides a team of over 70 residents and more than 25 attending physicians and consultants.

His dedication to advancing medical knowledge is evident through his extensive involvement in various institutional responsibilities including president of the Swiss Comission for nutrition and the Swiss Society of Clinical Nutrition and Metabolism (GESKES).

With over authored 400 peer-reviewed publications in high ranked journals such as Lancet and JAMA, he also serves as Associate Editor of the American Journal of Clinical Nutrition, and is a regular reviewer of NEJM, Lancet, Annals of internal Medicine and for different funding institutions including the Swiss National Science Foundation (SNSF), the

French Ministry of Social Affairs and Health, the National Institute of Health (NIH) and the National Medical Research Council (NMRC).

Prof Schuetz's unwavering dedication to patient care, research, and education has established him as a highly respected and influential figure in the medical community.

General

Google Scholar ID https://scholar.google.com/citations?hl=en&user=T7_V7UsAAAAJ

Abstract

Disease-Related Malnutrition is a common condition among medically complex inpatients. Emerging evidence demonstrates that malnutrition directly increases the risk for adverse clinical outcomes including mortality, morbidity and functional impairment[1-3]. Data from the largest trial with over 2000 patients on the Effect of early nutritional support on Frailty, Functional Outcomes and Recovery of malnourished medical inpatients Trial (EFFORT) revealed that the nutritional support intervention was highly effective in lowering the risk for mortality with a number needed to treat (NNT) of 374.

Fortunately, current evidence from clinical trials indicates that malnutrition is a modifiable risk factor, through the application of nutritional support interventions[4-6]. A systematic review and meta-analysis examining the impact of oral nutritional supplements (ONS) in community settings on clinical outcomes has been published recently[7]. This review included 44 randomized controlled trials (29 surgical and 15 medical patients) with 5,716 participants aged on average 67 years; prescribed ONS provided mean intake of 588 kcal/day and 22 g/day protein, where the energy contribution from protein averaged at 22%. The mean duration of ONS prescription was 74 days. The data from most of the RCTs (77%) revealed that less complications were reported in the ONS group than the control group. In a meta-analysis of 39 trials, it was shown that consumption of ONS led to a significant decrease in complications — which includes infections and pressure ulcers, along with promoting wound and fracture healing factors. The statistics point towards reductions in case complications both when ONS were used at hospitals as well as communities (OR 0.72, 95% CI 0.59-0.87; p=0.001), even more significantly when only used in the community (OR 0.65, 95% CI 0.52-0.80; p<0.001).The reductions in complications were observed primarily in cases of high ONS adherence of 80% or

more (OR 0.63, 95% CI 0.48-0.83; p=0.001) and with the use of ready-to-drink ONS (OR 0.69, 95% CI 0.60-0.81; p<0.001). A systematic review conducted by Hubbert et al. showed that high concentrated nutritional formulas (>2 kcal/mL) with low-volume formats, excellent palatability, and a wide choice of flavors improved compliance[8].

Advancing the management of malnutrition in medical patients involves implementing evidence-based approaches, such as the use of high concentrated oral nutritional supplements, to effectively address the energy and protein deficits experienced by patients, optimizing patient compliance and outcomes, and reducing the risks associated with malnutrition.

Currently, the field moves more towards "personalized nutrition," where illness-specific factors (e.g., comorbidities, chronic or acute course), patient-specific factors (age, sex, genetic elements), or nutritional biomarkers provide information on whether or not a patient is expected to benefit from nutritional support. Such an approach may help to further improve clinical outcomes of the vulnerable population of malnourished medical inpatients.

In this lecture we will discuss the “Evidence-Based Approaches through High Energy Protein-Dense Oral Nutritional Supplements”.

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