SYMPOSIUM ABSTRACT BOOK

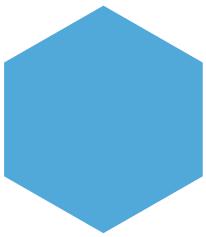
Satellite Symposium

Undernutrition, Sarcopenia and Frailty: optimizing nutrition care in the elderly

Krakow, Poland

Nestlé HealthScience

41st ESPEN Congress on Clinical Nutrition & Metabolism



SATELLITE SYMPOSIUM PROGRAM

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Moreno Perugini
Global Head of Medical Affairs and Market Access

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Chairman of the Polish Society for Parenteral, Enteral Nutrition and Metabolism and Head of the General and Oncology Surgery Unit, Stanley Dudrick's Memorial Hospital, Skawina, Poland

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Welcome

Moreno Perugini

MBA, MHE, MPA, CPP
Global Head of Medical Affairs
and Market Access

A longer life expectancy is one of the greatest achievements of modern times. But it also represents a challenge as medium-term projections show a progressive increase in disability and dependency. For this reason, public health policies worldwide are focusing on promotion of good health and maintenance of autonomy.

Nestlé Health Science believes that nutrition has the ability to positively impact people's quality of life and therefore engages in meaningful scientific partnerships with healthcare professionals and institutions to further this approach. We lead pioneering projects around the world to advance the therapeutic value of nutritional interventions and develop specialized nutrition technologies based on evidence.

We believe that by working together and building our solutions based on science, we can empower healthier lives through nutrition

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Chairman

Prof. Stanislaw Klek
MD, PhD

SPEAKER BIOGRAPHY

Stanislaw Klek studied at Jagiellonian University Medical College in Krakow (1991-1997), where he also obtained a PhD degree (2003). Assoc. prof. in 2012, full Professorship in 2017. Specialist in general surgery (2005) and oncological surgery (2008). Head of the Oncology Surgery Clinic of Silesian Medical University in Katowice (2014-15). Head of the Oncology Surgery at the Stanley Dudrick's Memorial Hospital in Skawina, Poland (2010-ongoing). In charge of the Cracow HPN center for last 20 years.

Stanislaw Klek is member of numerous scientific and professional associations his research interests include clinical nutrition, metabolism, surgery, oncology and ultrasonography. He has published more than 190 original articles, 40 case reports, 26 book chapters, and over 160 congress abstracts. He was one of the first recipients of the European ESPEN Diploma (2010) and of the first ESPEN LLL Teachers (2008). He coordinates clinical nutrition graduate and postgraduate training at the Jagiellonian University School for Medicine. He is an Associate Editor for ESPEN Clinical Nutrition and other ESPEN journals. Member of ESPEN Special Interest Group on Acute Intestinal Failure, Working Group on the definition of malnutrition, Polish Council representative to ESPEN. Coordinator and lecturer at international Aesculap Academy trainings (including HPN workshops). Chairman of the International Section of American Society for Enteral and Parenteral Nutrition (ASPEN).

He has served on different national committees and is currently Chairman of the Polish Society for Parenteral, Enteral Nutrition and Metabolism (POLSPEN, since 2010).

Interested in film, music and sports (completed 4 Ironman 140.6, 3 Ironman 70.3, 3 Olympic triathlon distance races, 12 marathons).

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Age-Associated Cellular Decline

Prof. Matteo Cesari
MD, PhD

SPEAKER BIOGRAPHY

Matteo Cesari is Associate Professor of Geriatrics at the Università di Milano and Head of the Geriatric Unit at the Fondazione IRCCS Ca' Granda – Ospedale Maggiore Policlinico (Milan, Italy). His research activities are focused on the frailty condition and strategies aimed at preventing the disabling cascade.

Dr. Cesari's scientific projects have been funded by public agencies (including the US National Institute on Aging, the French Agence Nationale de Recherche, and the Italian Ministry of Health) as well as private institutions (e.g., the Swiss Bridge Foundation). He has currently published more than 400 articles in peer-reviewed scientific journals, 21 book chapters, and numerous other publications; more than 200 of his abstracts have been accepted at National and International meetings. Overall, his current h-index is 64. He is listed by Clarivate Analytics among the worldwide Highly Cited Researchers (**http://highlycited.com**).

Dr. Cesari is Editor-in-Chief of *The Journal of Frailty & Aging*, and Senior Associate Editor of the *Journal of the American Medical Directors Association (JAMDA)*. He is also member of the Editorial Board of several scientific journals (including and the *Journal of the American Geriatrics Society, The Journal of Nutrition, Health and Aging [JNHA] and Aging Medicine).*

He is the coordinator of the European Geriatric Medicine Society (EuGMS) Special Interest Group on "Frailty and resilience in older persons". Dr. Cesari also serves as consultant for the World Health Organization on the themes of aging and integrated care in older people.

ABSTRACT

Despite long-term investigation and enormous scientific advancements, the mechanistic foundations of senescence (i.e., the biological modifications of an organism as it ages after its maturity) and aging (i.e., the gradual and continuous accumulation of spontaneous changes in structure and functions over time) are still largely unknown. Over **300 mechanisms have been proposed in the literature to explain the underlying molecular and physiological processes of the aging**. Some mechanisms have gained larger credibility than others, but none is yet considered sufficient to explain the mechanistic basis of aging.

Aging is the primary factor responsible for the **progressive loss of physiological integrity**, onset of **diseases, functional impairment, and increased vulnerability to negative health-related outcomes** (including death). Understanding how we biologically age may help us to characterize the way in which clinical phenotypes develop. The pre-clinical approach to the study of age-related conditions implies the introduction of the concept of aging into clinical practice. It means abandoning the obsolete construct of categorical diseases in favor of a new model of research focused on the common/shared pathophysiological basis of clinical manifestations of aging people.

Several mechanisms, common across organisms, **have been proposed in the literature as responsible for aging**, including **genomic instability, telomere attrition, epigenetic alterations, mitochondrial dysfunction, and stem cell exhaustion**. The study of these mechanisms serves to identify the most promising targets for future interventions aimed at preventing/slowing down the aging process and its detrimental consequences. In this presentation, the mechanisms contributing to age-associated cellular decline will be discussed. Special attention will be given to those mechanisms that are particularly related to the skeletal muscle performance with age.

1. López-Otín C, Blasco MA, Partridge L et al.The Hallmarks of Aging. Cell 2013;153(6):1194-217
2. Fabbri E, et al. Aging and Multimorbidity: New Tasks, Priorities, and Frontiers for Integrated Gerontological and Clinical Research. J Am Med Dir Assoc 2015;16(8):640-7
3. Andreux PA, et al. Mitochondrial function is impaired in the skeletal muscle of pre-frail elderly. Sci Rep 2018;8: 8548

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Undernutrition, Sarcopenia and Frailty. Is there a link?

Prof. Pedro Abizanda Soler
MD, PhD

SPEAKER BIOGRAPHY

Geriatrician since 1993, PhD in Medicine in 2000 and Master in research in 2001. Head of the Geriatrics Department at the Complejo Hospitalario Universitario of Albacete, Albacete, Spain since 2012, and Professor of Geriatric Medicine at the Medical School of Universidad de Castilla-La Mancha since 2002. Head of the research group on Aging from Albacete (GAITE), included in CIBERFES (Frailty and Healthy Aging Research Spanish Consortium), and President of the Ethics Review Board of the Complejo Hospitalario Universitario of Albacete. Editor of the Spanish Textbook of Geriatric Medicine, and author of more than 80 articles in peer-review journals with an impact factor greater than 100. Reviewer in first-decile Geriatric Medicine and General Medicine Journals.

Participant in the Joint Action on frailty ADVANTAGE from the EU, and in the advisory group on Frailty of the Spanish Health Ministry since 2013. Principal investigator in phase II and II randomized clinical trials in Frailty, Sarcopenia, Dementia and Nutrition in older adults. My topics of interest are Frailty, Sarcopenia, Nutrition, Dementia and Falls in older adults.

ABSTRACT

There is a growing body of evidence that links nutrition to muscle mass, strength, frailty and function in older adults[1], not surprisingly, **frailty, sarcopenia and undernutrition are all of them included in the 2017 ESPEN consensus on nutritional disorders**[2]. There is a **significant decline in general food consumption with aging, and in particularly protein and energy intake , as energy needs decrease, leading to metabolic and signaling changes and ultimately to undernourishment, frailty and sarcopenia.** Further age-related physiological, psychological, ambient and social factors determine the final relationship between these three conditions.

Although frailty and sarcopenia are related, these are significantly distinct conditions. **Sarcopenia is a contributor to the development of frailty, while frailty represents a much broader concept.** ADVANTAGE Joint Action initiative defines frailty as a progressive age-related decline in physiological systems that results in decreased reserves of intrinsic capacity, which confers extreme vulnerability to stressors and increases the risk of adverse health outcomes[3]. Sarcopenia is a muscle disease (muscle failure), with low muscle strength overtaking the role of low muscle mass as a principal determinant (EWGSOP2)[4]. Muscle mass (quality) has ben also recently regarded as a key contributor to sarcopenia. Primary or age-related sarcopenia is defined by absence of specific cause or cofounding disease, while secondary sarcopenia is considered when factors like systemic inflammatory processes (cancer or organ failures), physical inactivity or inadequate intake of energy or proteins are present.

From an epidemiological point of view, **30% of sarcopenic older adults are undernourished,** while **80% of elderly suffering from undernutrition have sarcopenia[5].** Moreover**, two thirds of older adults with undernutrition are frail or prefrail,** and between **8-16% of frail ones are malnourished**[6,7]. These figures reinforce the relationship between these three different conditions.

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From a **clinical and diagnostic point of view**, there is a **clear link between undernutrition, frailty and sarcopenia**: weight loss (one of the 5 frailty phenotype criteria), and reduced muscle mass (one of the EWGSOP2 sarcopenia criteria) are categorized as phenotypic criteria for malnutrition characterization following the Global Leadership Initiative on Malnutrition (GLIM)[8]. While inflammation (relevant pathologic pathway for both frailty and sarcopenia) is categorized as an etiologic criteria. For the diagnosis of malnutrition, GLIM recommends that the combination of at least one phenotypic and one etiologic criterion are required[8].

From a **pathogenic point of view, low-grade chronic inflammation is the initial link** between these conditions[9]. **Clinical assessment** easily **recognizes** severe, **chronic or** frequently recurrent inflammation like in **infections, burns, trauma, heart failure, chronic obstructive pulmonary disease, rheumatoid arthritis, chronic kidney disease or cancer.** However, low-grade chronic inflammation, usually associated to frailty and sarcopenia, can be difficult to demonstrate, because serum biomarkers lack sensitivity and clinical assessment is difficult. It is of interest to integrate the role of adiposity and activated adipocytes, combined with under or over nutrition, in the accumulation of pro-inflammatory macrophages and deregulated production of various adipokines that together with senescent cells can create a local pro-inflammatory status triggering the onset of frailty and sarcopenia[10]. Finally, the association between gut microbiota, low-grade chronic inflammation, frailty and sarcopenia has been also well described. Low nutrition intake associated with decreased physical function may change the gut microbiota milieu, increasing *inflamm-aging* and leading ultimately to frailty and sarcopenia[11].

Finally, and from a **management point of view, undernutrition, sarcopenia and frailty share common approaches.** Multicomponent interventions that include **diet advise, protein intake**, **nutritional supplementation, physical exercise and polypharmacy review have demonstrated benefits on the three conditions**, and with a s**ynergistic benefit when prescribed together**[12]. The combination of **physical exercise with oral nutritional supplementation in scheduled programs have been shown to increase in muscle mass and function and a decrease the adipose muscle infiltration leading to improvements in frailty and sarcopenia status**. In the future, a "Precision Medicine" approach will be necessary in order to adapt nutrition and exercise quality and intensity to every older adult special needs. Finally, a multidimensional and multiprofesional approach based on Comprehensive Geriatric Assessment, Geriatric Medicine and function-based decision algorithms will contribute to the best healthcare for older adults[12].

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Oral nutritional support in medical inpatients – is it worth the EFFORT?

Prof. Prof Philipp Schütz
MD, PhD

SPEAKER BIOGRAPHY

Prof Philipp Schütz is Head of Internal Medicine and Emergency Medicine ("Chefarzt") at the Medical University Department Kantonsspital Aarau, Tellstrasse in Switzerland and has a professorship at the University of Basel in Switzerland. He is FMH board certified in Endocrinology and Internal Medicine and has received a Master degree of Public Health with from Harvard School of Public Health in Boston.

Prof Schütz has membership in different Scientific and Professional Organizations including the Eidgenössische Ernährungskommission (201 -present), GESKES (Gesellschaft für klinische Ernährung in der Schweiz 2014–present), hospital Nutritional Board (Ernährungskommission, EKO, 2013–present), European Society of Clinical Nutrition and Metabolism (2014–present), Swiss Society of Endocrinology & Diabetology (2006–present), the Endocrine Society (USA; 2006–present), American College of Physicians (2013–present), Swiss Association for Internal Medicine (2003–present).

His research work includes 285 publications, 213 peer-reviewed original publications [total Impact Factor: 1432; H-Index -Google Scholar: 58 (05/19)]. Responsible for the research strategy and the interdisciplinary OPTIMA–TRIAGE team, the "Antibiotic Stewardship" research team and responsible for the nutritional and endocrine research strategy and the EFFORT Study Team.

ABSTRACT

The recently published ***Effect of early nutritional support on Frailty, Functional Outcomes and Recovery of malnourished medical inpatients Trial (EFFORT)*** asked the basic question of whether nutritional therapy based on different nutritional components during the hospital stay improves clinical outcomes of medical patients at nutritional risk compared to standard hospital food.[1]

EFFORT is a pragmatic, investigator-initiated, open-label, non-commercial, multicenter, randomized-controlled trial, that **tested the hypothesis that individualized nutritional support to reach protein and energy goals reduces the risk of adverse clinical outcomes in medical inpatients at nutritional risk.**

This effectiveness trial was conducted in eight Swiss hospitals and randomized 2028 medical inpatients at nutritional risk, defined by a Nutritional Risk Screening [NRS 2002] score ≥3 points, to receive protocol-guided individualized nutritional support to reach protein and energy goals (intervention group) or standard hospital food (control group).

The composite **primary endpoint was adverse clinical outcomes** defined as all-cause mortality, intensive care admission, non-elective hospital readmission, major complications and decline in functional status at 30 days with mortality being the principal secondary endpoint of interest. In the trial, nutritional **support was provided according to a previously established nutritional protocol[2],** which is in line with the ESPEN guidelines for polymorbid medical inpatients[3]. For each patient, individualized nutritional energy and protein goals were defined and setupon hospital admission. The protocol also proposed nutritional interventions to reach these goals by the establishment of an individual nutritional plan by a trained registered dietician.

The EFFORT trial found that nutritional goals could be reached, mostly by using of oral nutrition including oral nutritional supplements, in a majority of intervention group patients. Importantly, regarding the primary endpoint, the trial found that upon 30 days 232 of 1015 patients (22.9%) in the intervention group experienced an adverse clinical outcome

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compared to 272 of 1013 (26.9%) of the control group patients corresponding to a number needed to treat of 25 to prevent one severe complication. There were also significant lower rates of death in the intervention group compared to the control group (7.2% vs. 9.9%) and notable improvements in functional outcomes and in quality of life measures.

These results provide strong evidence for the concept of systematically screening medical inpatients on hospital admission in terms of nutritional risk, independent of the medical condition, followed by a nutritional assessment and initiation of nutritional support in at-risk patients.

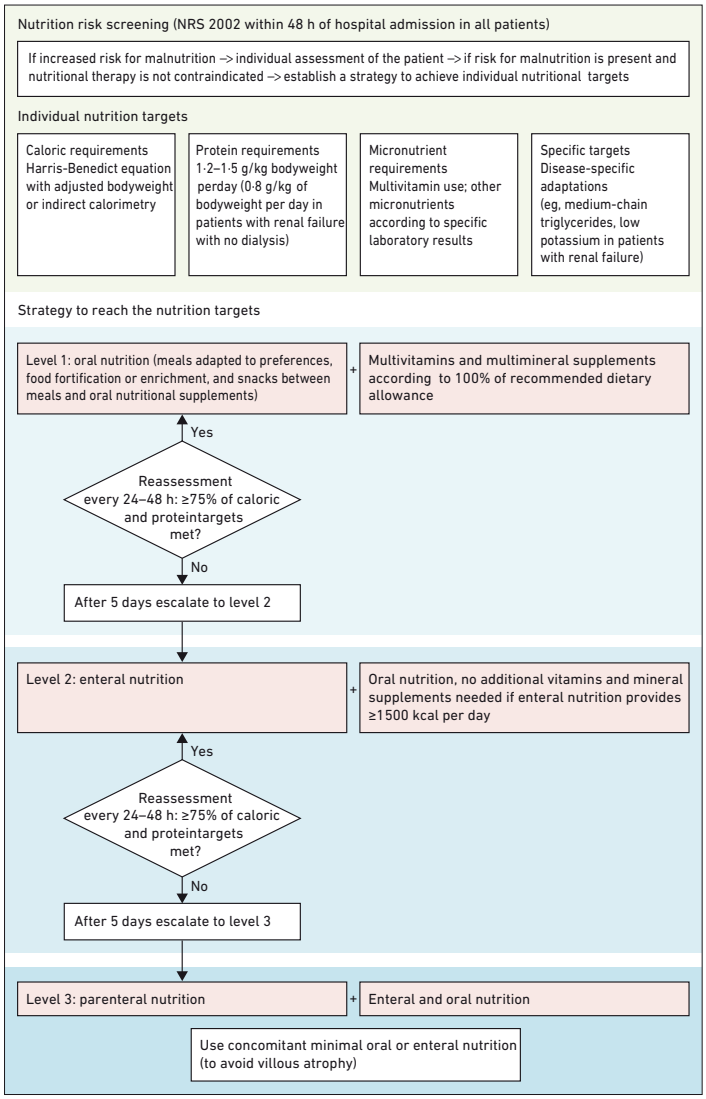

Figure 1: Nutritional algorithm used during the trial
Reproduced from Bounoure et al,[19] by permission of Elsevier.

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