Nutrition in Global Health & Disease Management - Regulatory Challenges, Policy Needs

3rd Food and Nutrition Policy Conference

Dr Manfred Ruthsatz, Nutrition & Healthcare

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- **Elevate the Role of Nutrition in Health & Disease Management**: Pyramids, Prevention, Population-Based & Personalized
- **Healthy Aging and Nutrition**: Medical, Macro, Micro & Mind the Gap
- **Gut Health & Nutrition**: Omics, Biotics et al.
- **Plant & Plant Products in Food** – EU's difficult route to harmonization, US Botanical Safety Consortium, Traditional Usage
- **The Future of Nutrition** – Shift Paradigms, Call4Action? Multi-stakeholder Partnerships

Nutrition Trends, Challenges & Opportunities in Health & Disease Management

- **LIFE STAGE NUTRITION**
- **MEGA-TREND NUTRITION**
- **MACRO & MICRO INGREDIENTS**
- **REGULATORY FRAMEWORKS & POLICY**
- **HEALTH & DISEASE TARGETS; MICROBIOME**
- **PERSONALIZED NUTRITION & ORPHAN DISEASE**
- **CONSUMER & PATIENT SAFETY**
- **MARKET & PATIENT ACCESS**
- **MULTI-STAKEHOLDER APPROACHES & POLICIES**

- Conception, Prenatal, Maternal, Adult, Healthy Aging; Sports …
- Personalized, Natural, Organic, Vegetarian/Vegan, Free-From/Food Sensitivities; Novel/Experimental, Ethnic/Origin, Sustainability/Waste
- Botanicals/CBD, Omega3, Astaxanthin, Lycopene, Vitamins, Minerals; Sports, Ethnic & SuperFoods …; Pro-, Pre-, Syn-, Post-biotics, Microbiome …
- Novel Foods, Health Claims; Nutraceuticals/Dietary/Food/Health Supplement; FSGs/FSDUs/FOSDU/FOSHU …
- Global Obesity Epidemic; Joint, Brain, CV, Immune, Metabolic … Health
- Digital, eHealth, Novel Diagnostics/"omics", Wearables …
- Nutrient Gaps; Timely Product Access & Safety
- Health Economics/Reimbursement ➔ Health(Care) Systems & Cost-Efficiency
- Big Decisions & Paradigm Shifts ➔ Working Together

Nutrition in Health & Disease Management ➔
Big Decision Areas to Design our Future HealthCare

Clinical Review & Education

Special Communication

The Paradox of Disease Prevention
Celebrated in Principle, Resisted in Practice

Harvey V. Fineberg, MD, PhD

Prevention of disease is often difficult to put into practice. Among the obstacles: the success of prevention is invisible, lacks drama, often requires persistent behavior change, and may be long delayed, statistical lives have little emotional effect, and benefits often do not accrue to the payer; avoidable harm is accepted as normal, preventive advice may be inconsistent, and bias against errors of commission may deter action. prevention is expected to produce a net financial return, whereas treatment is expected only to be worth its cost; and commercial interests as well as personal, religious, or cultural beliefs may conflict with disease prevention. Six strategies can help overcome these obstacles: (1) Pay for preventive services. (2) Make prevention financially rewarding for individuals and families. (3) Involve employers to promote health in the workplace and provide incentives to employees to maintain healthy practices. (4) Reengineer products and systems to make prevention simpler, lower in cost, and less dependent on individual action. (5) Use policy to reinforce choices that favor prevention. 6) Use multiple media channels to educate, elicit health-promoting behavior, and strengthen healthy habits. Prevention of disease will succeed over time insofar as it can be embedded in a culture of health.

JAMA. 2013;310(7):85-90.

Author Audio Interview at jama.com

CME Quiz at jamanetworkcme.com and CME Questions page 93

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Why is prevention such a difficult sell? This puzzling question surfaces daily in clinical practice and public health, and it intrudes on policy makers wanting to make scientifically sound, evidence-based policy decisions. Because prevention is so deeply embedded in US culture, the relative neglect of preventive medicine seems paradoxical. Proverbs such as "a stitch in time saves nine" and "an ounce of prevention is worth a pound of cure" are repeated by grandparents and grandchildren alike. Culturally, prevention is valued. Yet despite familiar aphorisms and frequent lip service, prevention of disease is, in the words of Shakespeare's Hamlet, "a custom more honour'd in the breach than the observance."[1]

Prevention did much to advance human longevity to the level seen today. Fossil records suggest that early modern humans living 25 000 to 40 000 years ago survived on average to their mid-twenties.[2] In the millennia leading up to the beginning of the 20th century, average life expectancy increased by another 25 years, a rate of not more than 1 year per thousand years. Then, in the space of just 100 years, life expectancy in the most developed countries increased another 25 years. Only in the 20th century did accelerating economic growth, improved sanitation practices, and recognition of infectious diseases allow development of better nutrition and living conditions and even the safe widespread use of vaccines and antimicrobials. The great infectious diseases that flourished in the slum conditions of newly industrialized nations were no longer as threatening. By 2010, noncommunicable diseases accounted for two-thirds of deaths in the world.[3] This epidemiologic transition raises the stakes for prevention of chronic disease.

The needed preventive approaches differ in several key ways from the traditional curative approach most commonly emphasized in practice (Table). When a patient seeks medical care because of symptoms, the physician's goal is to make a diagnosis, understand the pathology driving the disease, and identify the optimal treatment for that patient. For the care and cure of the individual patient, it is not particularly relevant how many others in the community may experience a similar ailment.

Prevention reverses the usual order of clinical thinking. It often starts at the population level and then translates information back to the individual. Rather than dwell on the pathology of disease, preventive medicine focuses on risk. In curative care, the goal is usually to restore patients to their earlier, normal state of health. In prevention, as in dealing with hypertension or elevated cholesterol levels in a community, the goal is to shift the entire population-wide distribution to a healthier level, thus changing the norm. In curative care, the principal professional responsibility is to the individual patient, whereas in preventive care, focus is often at the population level and entails a responsibility to the entire community. In curative care, solutions involve prescribing medication, performing operations, or delivering other clinical therapies. In prevention, there is a much wider array of possibilities, from changing behavior choices to altering social conditions, in addition to clinical interventions such as immunizations. Ensuring the health of a population is more difficult than delivering health care to an individual.

Obstacles to Prevention

At least a dozen reasons explain why prevention is so regularly resisted, regardless of how good it is in principle or celebrated in cultural lore (Box 1).

jama.com JAMA July 3, 2013 Volume 310, Number I 85

Population Based Nutrition

Elevate Role of Nutrition

Personalize Nutrition

Food Fortification

«Varied & Balanced» Dietary Guidelines

DRI, NRV, EAR, UL, … (age/gender/pregnancy …)

NCD Prevention

Disease Related Malnutrition Management

Nutrition Therapy, Enteral & Parenteral Nutrition

HealthCare Professionals

Rare («Orphan») Diseases

NCD-NRVs …

Dietary/Food Supplements

Microbiome & technologies («omics», apps, 3D; N-of-1 …)

WIN-WIN-4 «Citizens»

Improved Consumer & Patient Care

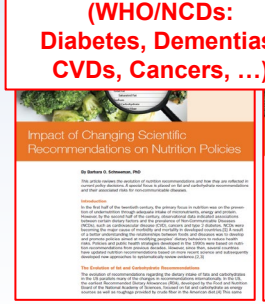
Sustainable Health Systems Costs

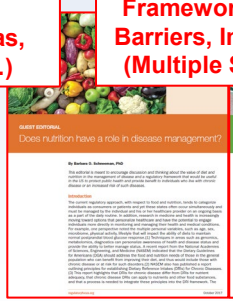
KEY TOPICS & HURDLES

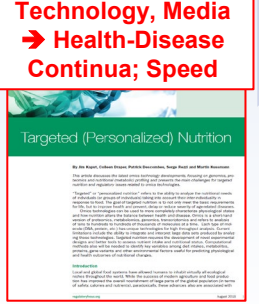
Improve Status Quo (WHO/NCDs: Diabetes, Dementias, CVDs, Cancers, …)

Regulatory & HealthCare Frameworks: Technical Barriers, Implementation (Multiple Stakeholders)

Regulatory, Science Technology, Media ➔ Health-Disease Continua; Speed

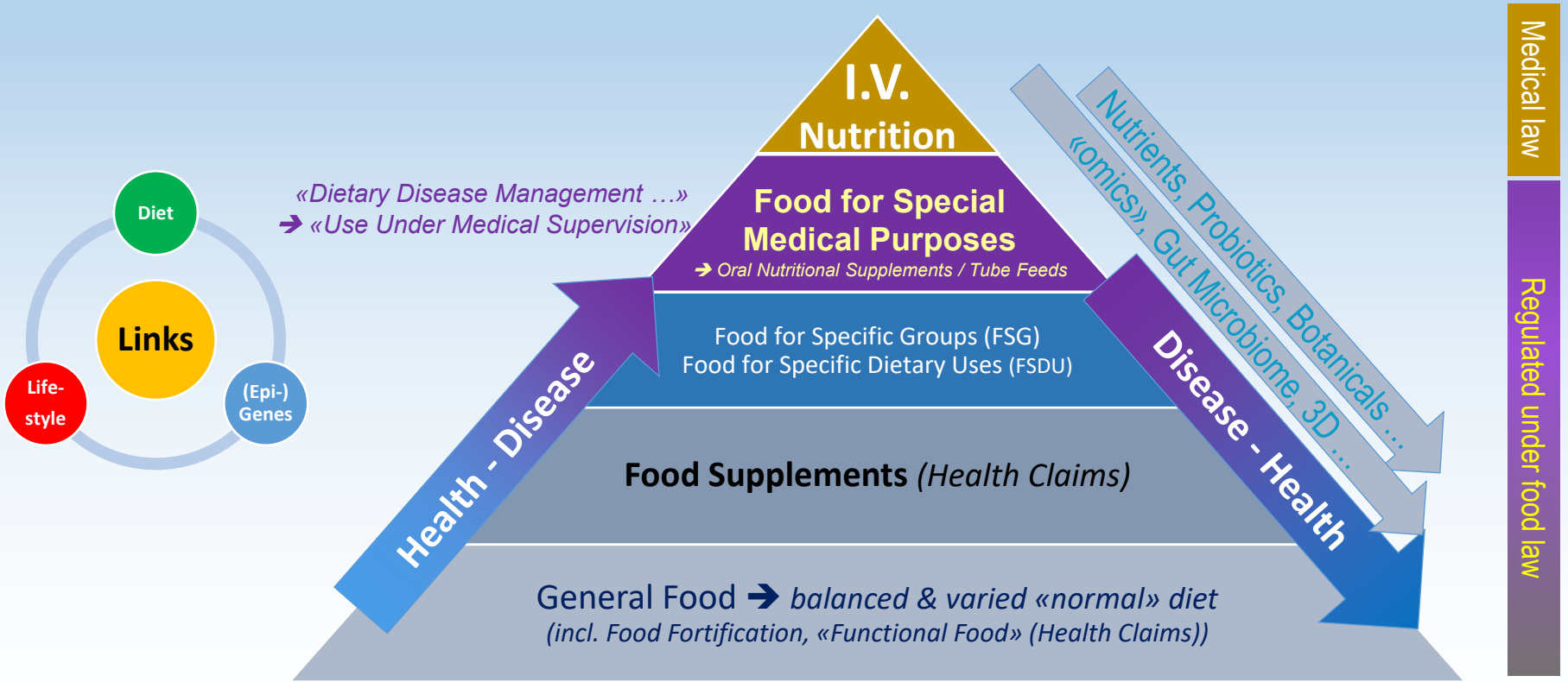






https://www.raps.org/news-and-articles/news-articles/2019/7/nutrition-in-health-and-disease-management

Healthy Consumer ⇔ Patient «Continuum»
«Personalizing» the NUTRITION PYRAMID Regulated Categories



“Nutrition4Future©” in a VUCA World

➔ Paradigm Shift(s) in HealthCare!?

4 VALUE AREAS ➔ NUTRITION4

NUTRITION NOURISHES, IS SAFE & (COST-)EFFICIENT

HEALTHIER, BALANCED, SUSTAINABLE DIET

➔ More veggies, fruits, water …; less meat, sugar, salt, alcohol …; supplement nutrient gaps; Good Start4Life; Active & Healthy Aging; Fight Undernutrition (WHO)

DISEASE MANAGEMENT

➔ Dysphagia/Stroke, Surgery/ ICU, Elderly Patients/Dementia, … Patient Perspectives on Nutrition (ONCA campaign) …

DISEASE PREVENTION

➔ Diabetes, CVD, Cancer, Dementia … (WHO’s SDGs) Obesity; High Cholesterol; Spina Bifida (Folate), Falls … “Prevention preferable to Therapy”

DISEASE THERAPY

➔ Inborn Errors of Metabolism (PKU, MSUD, …), Crohn’s, Cow’s Milk Allergy, Intractable Epilepsy …

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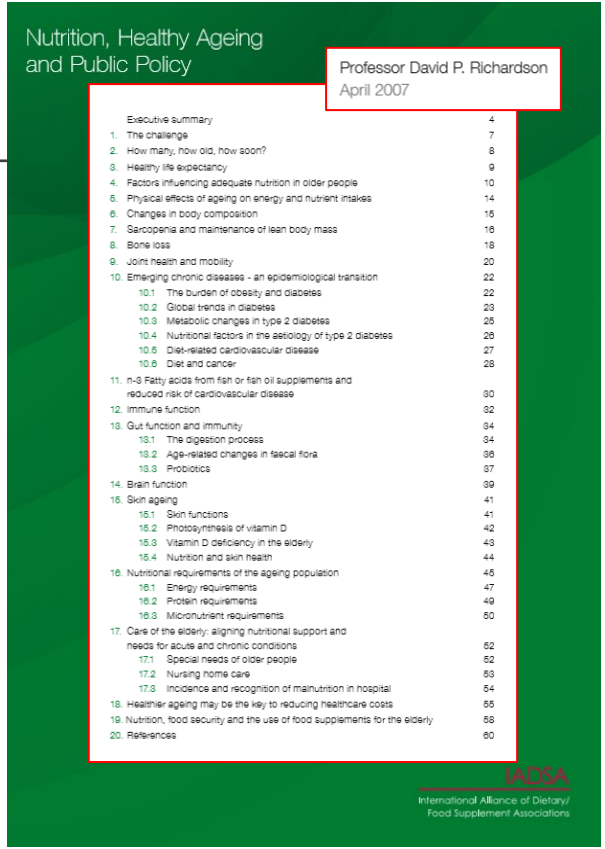
Healthy Aging & Nutrition

- **Heterogenous Population, Multi-Morbidity (NCDs), …**
  - Life-expectancy, Mobility, Dental Issues,
    Decreased Food Intake/Variety, Metabolism, Sensory
- **Macro-, Micronutrients, Probiotics ... & Quality of Life**
  - Diets/Vegetables/Plants/"Superfoods", Supplements
    - **Mind the Gaps**: Ca, Mg; Vit. D, Bs … (cf NHANES, 2009-2010)
  - Food For Special Medical Purposes
- **Health Economics, Reimbursement, Cost-Efficiency …**
  - Healthy Aging includes Nutrition:
    A key to reducing healthcare systems' costs



Personalized (Targeted) Nutrition – Opportunity & Risk

GET THE BASICS RIGHT! START WITH MEASURING

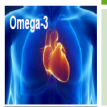
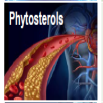
- Validated Diagnostics («omics; apps; wearables; …) to target reliable nutritional advice
- Science: critical for an effective regulation & policy, yet may not give all answers ➔ A demonstrated, perceived & sustained potential to improve consumer care, well-being & health systems is key

WHAT IS THE REAL ADVANTAGE? CITIZEN HEALTH

- Target micronutrient gaps (Vit.B12, Folic, D(winter!); Fe; Zn; …): elderly; vegetarians; ethnicities; …
- Macro & Other nutrients: Kcal, keto & other diets, lactose, caffeine (CYP1A2/CVD), …
- Preventable events & return for € spent (Ca/Vit.D; phytosterols; Omega-3 …)

WHERE IS THE REAL RISK? LIMITED, YET QUESTIONS

- Beliefs vs. Facts! Adherence? Long-term effects? Overdosing/Safety? Complexity & Uncertainty?
- Science vs. «Bad Actors»! Social Media/Speed! Paying out-of-own-pocket
- **Missing opportunity for low-risk solution to mind the nutrient gaps**

	Relative risk reduction	Number of preventable events (over 5 years)	Healthcare costs savings (over 5 years	Return for every € 1 spent
	- 4.9 %	1.5 Mn	€ 64.5 Bn	€ 2.29
	- 2.3 %	0.85 Mn	€ 26.5 Bn	€ 4.37
	- 15 %	0.93 Mn	€ 19.8 Bn	€ 3.47

More information under: www.foodsupplementseurope.org

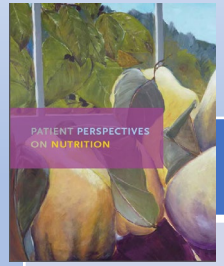
Rare Metabolic Disorders & Food For Special Medical Purposes

Medical Condition	Amino Acid*	Incidence (est.)**	# (pa EU)**
Phenylketonuria (PKU)	Phe	1:10,000 (EU); 1:2600 (TR) - 1:18,300 (IN) - 1:200,000 (FI)	460
Tyrosinaemia	Tyr, Phe	1:105,000 (TYR1, most common type)	46-66
Maple Syrup Urine Disease (MSUD)	Leu, Ile, Val (BCAAs)	1:180,000-250,000 (US; AT); 1:200 (Amish; Mennonites; Jewish)	20
Homocystinuria	Met, Cys	1:100,000	46
Organic acidemia	Met, Val, Thr, Ile	1:85,000	164
Glutaric aciduria	Lys, Trp	1:80,000 (US prevalence: 140)	137
Galactosemia	*[Lactose; Galactose]*	1:45,000	53-79

***Essential AAs**: Phe, Thr, Trp, Met, Lys, His, BCAAs (Leu, Ile, Val) // **Sources: Wikipedia; NIH; Diätverband, DE

FSMP Usage – A Value Story

- **FSMPs** are specialised foods designed to meet the nutritional or dietary needs arising from a wide range of medical conditions for patients of all ages.
- **FSMPs** have a long-standing, regulated **history of safe & beneficial usage** (EU & US).
  FSMPs **cannot be replaced by normal foods** marketed to and consumed by healthy people.
- **FSMPs - an integral part of patient management**
  - Critical in **improving patient outcomes** - help to reduce the length of hospital stays, minimize (re-) admission and limit the need for other healthcare resources when consumed and taken correctly.
  - FSMP use is consistently linked to **lower mortality & complication rates** for malnourished patients when compared to standard care.
  - These improved outcomes help to **reduce costs** of patient management for healthcare systems. *[33 mill. persons at risk of malnutrition; estim. 170Bn € p.a.]*

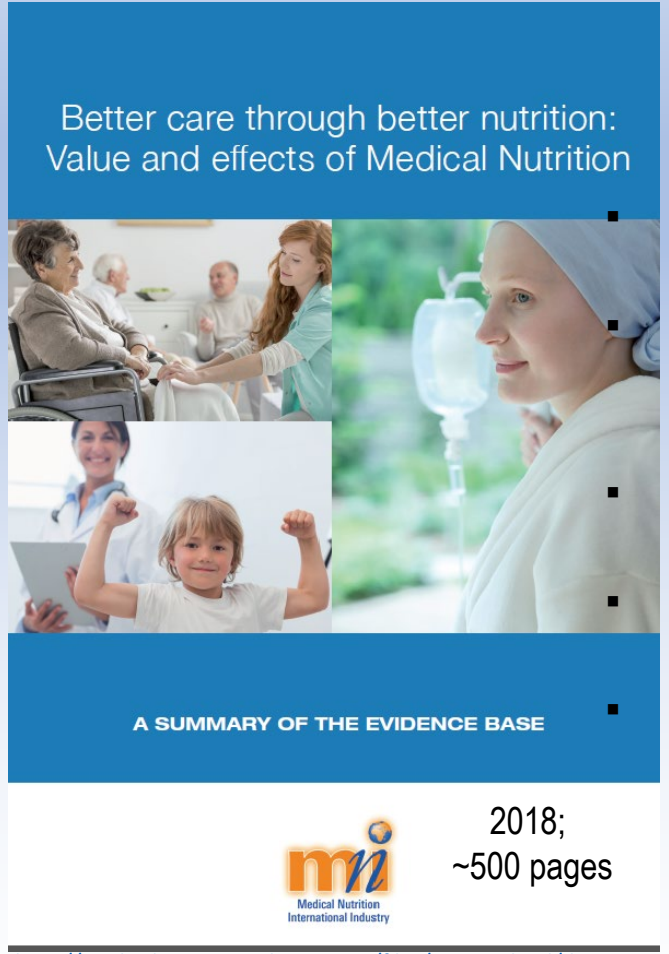


Medical Nutrition: Improving Nutritional Status / Clinical Advantage

	Medical Condition	Clinical Benefit
Nutrition as Disease-related Malnutrition Management	Short Bowel Syndrome; Stroke	Lifesaving Intervention
	COPD	Increased Ventilatory Capacity
	Surgical Patients	Less Complications
	Older patients	Increased Quality of Life, Decreased Morbidity/ Mortality
Nutrition as Disease Management («Therapy»)	Crohn's Disease	Induction of Remission
	Cow's Milk Allergy	Reduced Symptoms, Catch-up Growth
	IEMs: PKU, MSUD, FAOD, GSD …	Normal Growth & Development
	Intractable Epilepsy	Less Seizures; Normal Growth & Development

Can be a de-facto Disease Prevention/Management/Treatment - Complementing Drugs

Adapted from: http://www.eu-patient.eu/globalassets/press/pressreleases/2013-05-24_pr-nutrition_epf-egan-enha.pdf



http://medicalnutritionindustry.com/files/user_upload/documents/medical_nutrition/2018_MNI_Dossier_Final_web.pdf

REIMBURSEMENT

- FSMPs are one solution to disease-related malnutrition management
- Importance of FSMPs as an integral part of patients treatment is strongly supported by EU Member States
- FSMP status is a prerequisite for reimbursement as food
- US & EU: Tube feeds or ONS can be reimbursed *(yet not mandatory)*
- Reimbursement in the EU is a national competence of member states - coverage by National Health Systems

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The Microbiome Paradigm – Taking Center Stage

- **Hype & Reality, Certainty & Uncertainty**
- **Multiple Initiatives**
  - US National Microbiome Initiative, NASEM
  - OECD/Flemish Gvmt. Workshops (2016, 2017)
  - "Importance of Microbiota in Human Health" International Conference, Warsaw, Nov. 2018
  - EU Commission Initiatives (R&D, MIRRI …)
- Probiotics (species & strains), "Omics" Science & Multi-stakeholder Consultation & Publications …

Table 1. Policy Needs: the Microbiome as a Target for Personalized Nutrition

Regulatory Needs
• ensuring the science base • regulatory/legislative framework need to move with science at similar pace • harmonisation and flexibility of regulatory frameworks: • cross-border solutions: use a common language • address the reality of a food-drug continuum; a health-disease continuum; and a consumer-patient continuum • outcome benefits: allow for an acceptable level of scientific uncertainty • costs and reimbursement mechanisms needs to support the development of personalized nutrition for health and for the development and as part of preventive medicine
Creating Value

• communication – awareness creation
  • toward public
  • toward healthcare providers
• get the right messages to society
  • move from hype to reality
  • agree on opportunities
• dedicated training of healthcare professionals

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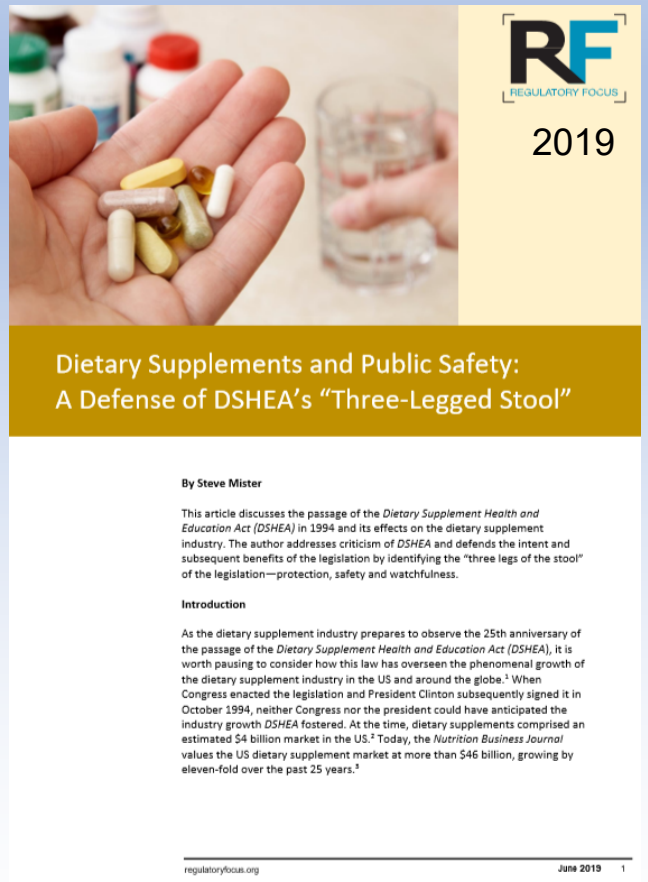
US Supplement Challenges: Solved & Left



REGULATORY FOCUS

2019

Dietary Supplements and Public Safety: A Defense of DSHEA's "Three-Legged Stool"

By Steve Mister

This article discusses the passage of the *Dietary Supplement Health and Education Act (DSHEA)* in 1994 and its effects on the dietary supplement industry. The author addresses criticism of *DSHEA* and defends the intent and subsequent benefits of the legislation by identifying the "three legs of the stool" of the legislation—protection, safety and watchfulness.

Introduction

As the dietary supplement industry prepares to observe the 25th anniversary of the passage of the *Dietary Supplement Health and Education Act (DSHEA)*, it is worth pausing to consider how this law has overseen the phenomenal growth of the dietary supplement industry in the US and around the globe.[1] When Congress enacted the legislation and President Clinton subsequently signed it in October 1994, neither Congress nor the president could have anticipated the industry growth *DSHEA* fostered. At the time, dietary supplements comprised an estimated $4 billion market in the US.[2] Today, the *Nutrition Business Journal* values the US dietary supplement market at more than $46 billion, growing by eleven-fold over the past 25 years.[3]

REGULATORY FOCUS

2019

The Botanical Safety Consortium (BSC): The Development of a 21st Century Framework for Assessing the Safety of Botanical Dietary Supplements

By Daniel S. Marsman, DVM, PhD, Joseph T. Dever, PhD, Stefan Gafner, PhD, Cynthia Rider, PhD, Sibyl Swift, PhD and James C. Griffiths, PhD

This article discusses steps to improve the safety of botanicals in dietary supplements. The authors discuss several US legislative initiatives and efforts by several nongovernmental organizations, such as the Council for Responsible Nutrition and the American Botanical Council, to track patterns of botanical use, and the Congress of the European Societies of Toxicology's efforts to approach safety issues, including its establishment of the Botanical Safety Consortium and its working groups.

Introduction

Natural health products, often considered a safe and natural alternative to conventional medicine, have exhibited a resurgence in Western society. In the US, since the introduction of the *Dietary Supplement Health and Education Act of 1994 (DSHEA)*,[1] the dietary supplement market has flourished. Concomitantly, the dietary supplement market has further morphed into various product streams, a most rapidly expanding one being products containing one or more botanical/herbal ingredients. In parallel with this market expansion, substantial advancements in analytical methodologies have led to a better understanding of the complexity and diversity of botanical chemistry and

EU & Global Supplement Challenges: Solved & Left

REGULATORY FOCUS

2018

Food Supplements in the European Union: the Difficult Route to Harmonization

Botanicals and Maximum Levels

By Patrick Coppens

This article describes European Union food supplements legislation and discusses a number of "stumbling blocks" to full regulatory harmonization. The author reviews a number of EU-wide issues in food supplement legislation, including national versus EU agendas, the "gray zone" between food supplements and medicines, and the problems with food supplement "health claims." In an effort to help companies be aware of what is coming so they can adjust their strategies accordingly, the author also offers several scenarios and possible obstacles and/or benefits future legislation may bring.

Introduction

Food supplements come in many shapes and sizes. They contain vitamins, minerals, botanicals and other substances having physiological effect on those who take them. While these products must comply with a series of European laws, the composition of these products is still largely subject to national legislation, resulting in numerous trade barriers even between European Union (EU) member states. While the calls for further regulatory harmonization of food supplements rings loudly, travel along the road to harmonization is slow and difficult.

The European Legislative Framework

Those who may think food supplements are today not legally regulated in the EU are misguided. Since 2002, the EU has created a legal and regulatory framework for these products with the *Food Supplements Directive* 2002/46/EC.(1)

This legislation means that all horizontal food law applies to food supplements, including the following legislation:

Annals of Nutrition & Metabolism

Consensus Paper

Ann Nutr Metab 2006;50:538–554
DOI: 10.1159/000098146

Published online: December 21, 2006

Use of Botanicals in Food Supplements

Regulatory Scope, Scientific Risk Assessment and Claim Substantiation

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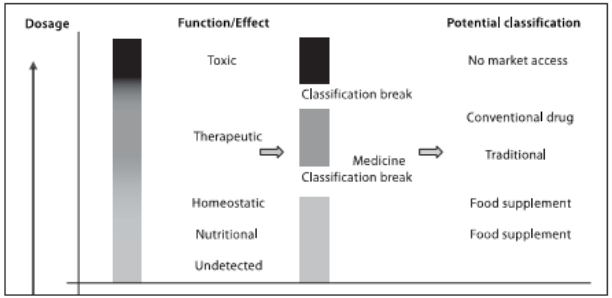
[a]European Responsible Nutrition Alliance, Brussels, [b]Ortis, Elsenborn, Belgium; [c]Horphag Research Management Ltd, Geneva, Switzerland; [d]DPR Nutrition Ltd., Croydon, UK; [e]Innéov, Asnières, France; [f]Phytolab, Vestenbergsgreuth, Germany; [g]Seven Seas, Hull, UK

Key Words
Botanicals, safety assessment · Herbal medicinal products, legislation · Food supplements, health claims · Risk assessment, herbal medicine · Functional foods, herbal

Abstract
Background/Aims: In the European Union, an elaborate legal framework regulates botanical products both under food and medicinal law. The decision as to which legal frame-

experience and grading of evidence. ***Conclusions:*** A model for safety and efficacy assessment of botanical food supplements in the EU is proposed, and should be taken into consideration in the development of legislation and scientific research on botanicals.

Introduction



Traditional Use of Botanicals and Botanical Preparations

An International Perspective

*Robert Anton, Basil Mathioudakis, Suwijiyo Pramono, Ekrem Sezik and Surinder Sharma**

Botanicals are used worldwide in food and supplements for their nutritional and physiological effects and have become part of the local and regional cultural heritage. The use of botanicals has evolved from experience over a long period of time, often over centuries. Folk knowledge of this use has been passed on from generation to generation and later been systematically recorded. This information is collectively called 'traditional use' and is the largest body of observational evidence in humans available. It is recognised as a valid body of knowledge to support the safe use of botanicals and document their health benefits. This paper describes the experience on how traditional use is accepted as a basis for support of the safety and benefits for health of botanical preparations used in food supplements. It proposes a common basis for the mutual acceptance of the evidence as assessed by expert judgement that may lead to recognition of the safety and benefits of botanicals in different parts of the world.

Keywords: Traditional use; botanicals; folk use; systematic use; conditions of use; physiological benefits; safety; food law; supplements.

I. Introduction

The use of botanicals and botanical preparations (hereafter referred to as botanicals) is as deeply rooted in local and regional culture as are traditional dishes and dietary habits. It is part of the heritage of knowledge that has accumulated over time and is transferred from generation to generation.

Representing four regions of the world, each with a distinct and extensive history and clear recognition of history of use of botanicals, this paper reflects the collective views of leading experts in the field on what information constitutes traditional use, exploring and describing how such traditional knowledge has accumulated and is used. This paper focuses exclusively on the tradition of use of botanicals used for nutritional or physiological benefits in supplements. In this paper, the term 'supplements' is used to designate a category of products in various jurisdictions referred to as 'food supplements', 'dietary supplements' or 'health supplements'. It covers concentrated forms of botanicals and other food compounds, in small unit dose form, intended to supplement the diet.

The aim of this paper is to:

- Provide an authoritative account of traditional uses of botanicals, principally in foods and supplements, based on knowledge, practice and experience from different parts of the world.
- Identify the key parameters characterising traditional use.

* Robert Anton of the Faculty of Pharmacy, University of Strasbourg, France; Basil Mathioudakis of Basil Mathioudakis Consulting, Food legislation and nutrition, Brussels, Belgium; Suwijiyo Pramono of the Faculty of Pharmacy, Gadjah Mada University, Yogyakarta, Indonesia; Ekrem Sezik of the Faculty of Pharmacy, Dept. of Pharmacognosy and Phytotherapy Yedtepe University, Chairman Scientific Commission on Botanicals Intended for Use as Food, Turkey; Surinder K. Sharma is the Chairman of the Scientific Panel on Health Supplement & Nutraceuticals, Food Safety & Standards Authority, Ministry of Health & Family Welfare and Former Advisor, Ayurveda Ministry of AUSH, India. Corresponding author: Prof Dr. Im. R. Anton, 9, allée de la Robertsau F-67000 Strasbourg. Email: <robert.anton@unistra.fr>.
Acknowledgement: Support for the development of this article was provided by the International Alliance of Dietary/Food Supplement Associations (<http://www.iadsa.org>).

Food Supplements, Botanicals

Quality and Safety

Food Supplements Europe Quality Guides

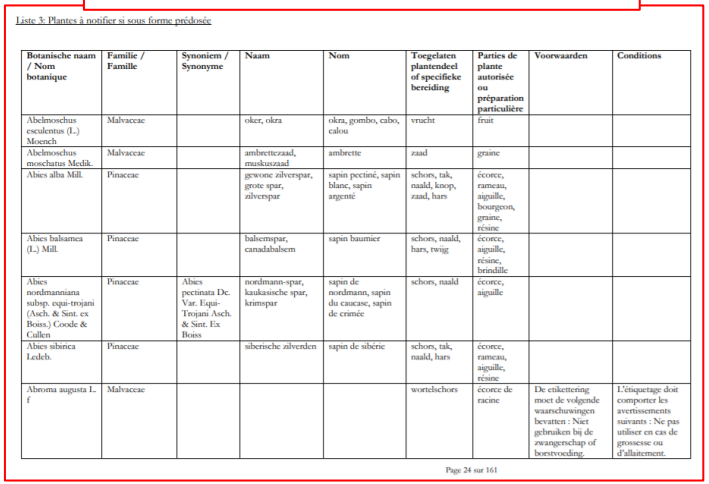
Good Manufacturing Practices Guide

Good Manufacturing Practices Questionnaire

Botanical Preparations Quality Guide

Botanical Preparations Quality Questionnaire

- **BELFRIT List:** Plants to Notify (in dosage form) https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/consolidated_version_rd_29_august_1997_v10-02-2017_fr.pdf0



Liste 3: Plantes à notifier si sous forme prédosée

Botanische naam / Nom botanique	Familie / Famille	Synoniem / Synonyme	Naam	Nom	Toegelaten plantendeel of specifieke bereiding	Parties de plante autorisée ou préparation particulière	Voorwaarden	Conditions
Abelmoschus esculentus (L.) Moench	Malvaceae		oker, okra	okra, gombo, cabo, calou	vrucht	fruit		
Abelmoschus moschatus Medik.	Malvaceae		ambrettezaad, muskuszaad	ambrette	zaad	graine		
Abies alba Mill.	Pinaceae		gewone zilverspar, grote spar, zilverspar	sapin pectiné, sapin blanc, sapin argenté	schors, tak, naald, knop, zaad, hars	écorce, rameau, aiguille, bourgeon, graine, résine		
Abies balsamea (L.) Mill.	Pinaceae		balsemspar, canadabalsem	sapin baumier	schors, naald, hars, twig	écorce, aiguille, résine, bridille		
Abies nordmanniana subsp. equi-trojani (Asch. & Sint. ex Boiss.) Coode & Cullen	Pinaceae	Abies pectinata De. Var. Equi-Trojani Asch. & Sint. Ex Boiss	nordmann-spar, kaukassische spar, krimspar	sapin de nordmann, sapin du caucase, sapin de crimée	schors, naald	écorce, aiguille		
Abies sibirica Ledeb.	Pinaceae		siberische zilverden	sapin de sibérie	schors, tak, naald, hars	écorce, rameau, aiguille, résine		
Abroma augusta L. f	Malvaceae				wortelschors	écorce de racine	De etikettering moet de volgende waarschuwingen bevatten : Niet gebruiken bij de zwangerschap of borstvoeding.	L'étiquetage doit comporter les avertissements suivants : Ne pas utiliser en cas de grossesse ou d'allaitement.

Page 24 sur 161

- https://foodsupplementseurope.org/wp-content/themes/fse-theme/documents/publications-and-guidelines/qualityofbotanicalpreparations.pdf
- https://foodsupplementseurope.org/wp-content/themes/fse-theme/documents/publications-and-guidelines/qualityquestionnaire.pdf

Botanicals between Science & Policy

- Botanical food supplements: ongoing expert debate among industry, governments & the scientific community
  - Determine the optimum methodology for the safety assessment
  - Clarify the borderline between the medicinal and food use; substantiate health claims

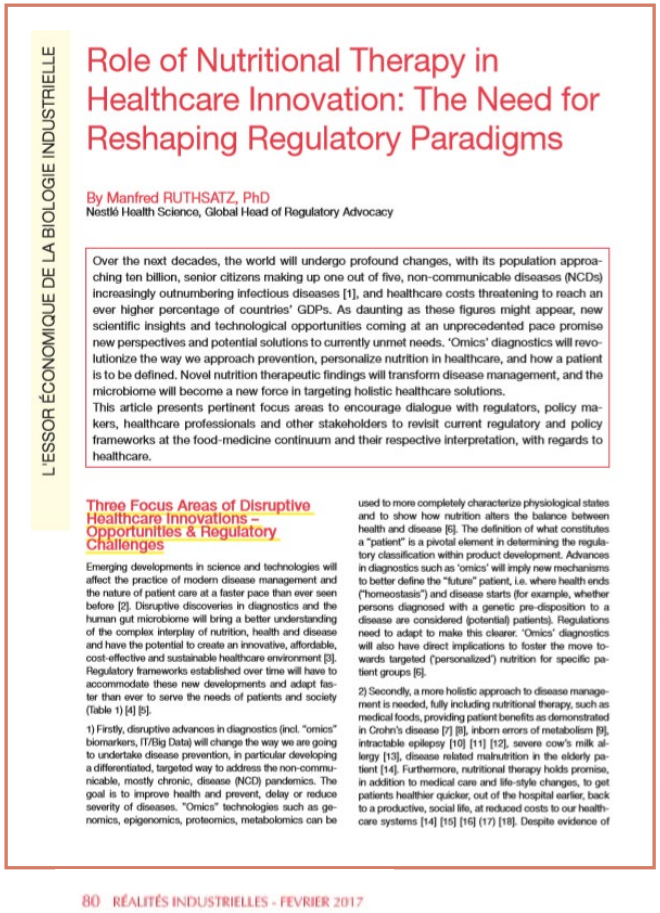
- Traditional Botanical Usage:
  - Recognized in different regions of the world
  - Additional to scientific data; often the only evidence available
  - Assessment & acceptance should be a matter of expert judgement

Nutrition in Global Health & Disease Management - Regulatory Challenges, Policy Needs

- **Elevate the Role of Nutrition in Health & Disease Management**: Pyramids, Prevention, Population-Based & Personalized
- **Healthy Aging and Nutrition**: Medical, Macro, Micro & Mind the Gap
- **Gut Health & Nutrition**: Omics, Biotics et al.
- **Plant & Plant Products in Food** – EU's difficult route to harmonization, US Botanical Safety Consortium, Traditional Usage
- **The Future of Nutrition** – Shift Paradigms, Call4Action? Multi-stakeholder Partnerships

Paradigm Changes - Call4Action

- **Multifactorial Game Changers**
  - Growing & Aging Population; NCDs
  - Disruptive technologies (omics; diagnostics); Social Media; e-Commerce; Speed
  - Market/Patient Access & Healthcare system costs (GDP%)
- **Regulatory Framework** ➔ Science, Proportionate
  - Categories ➔ Overcome, Interpret the Silos
  - Personalize Nutrition ➔ Plus Population Approaches
  - Disease Prevention ➔ Better than Treatment only
  - Nutrition Therapy ➔ Power of Nutrition, Synergize
  - Microbiome ➔ Accept Certain Uncertainty
- **Multi-stakeholder approaches** ➔ EU Commission; AHA, NuAge, ENHA/ONCA; OECD; Mérieux, …



L'ESSOR ÉCONOMIQUE DE LA BIOLOGIE INDUSTRIELLE

Role of Nutritional Therapy in Healthcare Innovation: The Need for Reshaping Regulatory Paradigms

By Manfred RUTHSATZ, PhD
Nestlé Health Science, Global Head of Regulatory Advocacy

Over the next decades, the world will undergo profound changes, with its population approaching ten billion, senior citizens making up one out of five, non-communicable diseases (NCDs) increasingly outnumbering infectious diseases [1], and healthcare costs threatening to reach an ever higher percentage of countries' GDPs. As daunting as these figures might appear, new scientific insights and technological opportunities coming at an unprecedented pace promise new perspectives and potential solutions to currently unmet needs. 'Omics' diagnostics will revolutionize the way we approach prevention, personalize nutrition in healthcare, and how a patient is to be defined. Novel nutrition therapeutic findings will transform disease management, and the microbiome will become a new force in targeting holistic healthcare solutions.
This article presents pertinent focus areas to encourage dialogue with regulators, policy makers, healthcare professionals and other stakeholders to revisit current regulatory and policy frameworks at the food-medicine continuum and their respective interpretation, with regards to healthcare.

Three Focus Areas of Disruptive Healthcare Innovations – Opportunities & Regulatory Challenges

Emerging developments in science and technologies will affect the practice of modern disease management and the nature of patient care at a faster pace than ever seen before [2]. Disruptive discoveries in diagnostics and the human gut microbiome will bring a better understanding of the complex interplay of nutrition, health and disease and have the potential to create an innovative, affordable, cost-effective and sustainable healthcare environment [3]. Regulatory frameworks established over time will have to accommodate these new developments and adapt faster than ever to serve the needs of patients and society (Table 1) [4] [5].

1) Firstly, disruptive advances in diagnostics (incl. "omics" biomarkers, IT/Big Data) will change the way we are going to undertake disease prevention, in particular developing a differentiated, targeted way to address the non-communicable, mostly chronic, disease (NCD) pandemics. The goal is to improve health and prevent, delay or reduce severity of diseases. "Omics" technologies such as genomics, epigenomics, proteomics, metabolomics can be used to more completely characterize physiological states and to show how nutrition alters the balance between health and disease [6]. The definition of what constitutes a "patient" is a pivotal element in determining the regulatory classification within product development. Advances in diagnostics such as 'omics' will imply new mechanisms to better define the "future" patient, i.e. where health ends ("homeostasis") and disease starts (for example, whether persons diagnosed with a genetic pre-disposition to a disease are considered (potential) patients). Regulations need to adapt to make this clearer. 'Omics' diagnostics will also have direct implications to foster the move towards targeted ('personalized') nutrition for specific patient groups [6].

2) Secondly, a more holistic approach to disease management is needed, fully including nutritional therapy, such as medical foods, providing patient benefits as demonstrated in Crohn's disease [7] [8], inborn errors of metabolism [9], intractable epilepsy [10] [11] [12], severe cow's milk allergy [13], disease related malnutrition in the elderly patient [14]. Furthermore, nutritional therapy holds promise, in addition to medical care and life-style changes, to get patients healthier quicker, out of the hospital earlier, back to a productive, social life, at reduced costs to our healthcare systems [14] [15] [16] [17] [18]. Despite evidence of

https://www.cairn.info/revue-realites-industrielles-2017-1-page-80.html

Nutrition Debates & Specifics:

Improving Practice & Policies …

Editorial

Knowledge and debate in the *American Journal of Clinical Nutrition*: new sections, new science, and looking forward and outward

Christopher P Duggan,[1] Lorraine Brennan,[2] Parul Christian,[3,4] Jessica Fanzo,[5] and David S Ludwig,[6] for the Editors of the American Journal of Clinical Nutrition

[1]Center for Nutrition, Division of Gastroenterology, Hepatology, and Nutriti
Institute of Food and Health, School of Agriculture and Food Science, UCD, I
[4]Department of International Health, Bloomberg School of Public Health, J
Nitze School of Advanced International Studies, Bloomberg School of Publ
Foundation Obesity Prevention Center, Division of Endocrinology, Boston Ch

In Vision 2028, the ASN's 10-y vision for its role as a scientific society, it is proposed that the ASN should adopt "a new outward-facing role to more actively leverage our science in the service of humanity (and animals) through the active translation and promotion of optimal nutrition for health" (1). In contrast to endorsing an archetypical inward-focused academic society, the white paper lists several ways for the ASN to engage its members and nutrition scientists to advance science and nutrition globally.

The Editors of the *American Journal of Clinical Nutrition* (*AJCN*) share these broad values (2), and have evaluated how the pages and content of our journal can carry these forward for the next 10 or more years. Although more changes are sure to come in these print and electronic pages, we are pleased to share with you our latest additional sections for the journal.

Great Debates in Nutrition

Recognizing that scholarly debate is a hi
process, we announce a new article categ
Debates in Nutrition (GDN).

All too often in nutrition science, major
to polarized camps in which the like-m
agree with each other, but fail to seek com
from opposing camps. This admittedly h
directly addressed, can impede a rational e
and promote politicization of science. Co
and unproductive discourse that can occ
of low-fat compared with low-carbohydra
compared with animal-based diets; or on t
saturated fat, and omega 3:6 ratio; or on
conflicts of interest and industrial support

The aim of this new article type is
for vigorous, timely, scholarly, and colle
topics in nutrition, especially those wit
clinical care and public health. For e
topic (formulated as a proposition) will
Editor, with suggestions from the *AJCN* re
example, "National Dietary Recommend
Limit Consumption of Saturated Fat."

Am J Clin Nutr 2019;00:1–3. Printed in USA. Co

Journal List > Genes Nutr > v.12; 2017 > PMC5264346

Genes & Nutrition

BMC

Genes Nutr. 2017; 12: 3.
Published online 2017 Jan 25. doi: 10.1186/s12263-016-0549-8

PMCID: PMC5264346
PMID: 28138347

Propelling the paradigm shift from reductionism to systems nutrition

Jim Kaput,[1] Giuditta Perozzi,[2] Marijana Radonjic,[3] and Fabio Virgili[2]

Author information ▸ Article notes ▸ Copyright and License information Disclaimer

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Women's health

Laville et al. Trials (2017) 18:425
DOI 10.1186/s13063-017-2160-8

Trials

REVIEW

Open Access

Evidence-based practice within nutrition: what are the barriers for improving the evidence and how can they be dealt with?

Martine Laville[1], Berenice Segrestin[1], Maud Alligier[1], Cristina Ruano-Rodríguez[2,3], Lluis Serra-Majem[2,3], Michael Hiesmayr[4], Annemie Schols[5], Carlo La Vecchia[6], Yves Boirie[7], Ana Rath[8], Edmund A. M. Neugebauer[9], Silvio Garattini[10], Vittorio Bertele[10], Christine Kubiak[11], Jacques Demotes-Mainard[11], Janus C. Jakobsen[12,13], Snezana Djurisic[1,7*] and Christian Gluud[1,7*]

Abstract

Background: Evidence-based clinical research poses special barriers in the field of nutrition. The present review summarises the main barriers to research in the field of nutrition that are not common to all randomised clinical trials or trials on rare diseases and highlights opportunities for improvements.

Methods: Systematic academic literature searches and internal European Clinical Research Infrastructure Network (ECRIN) communications during face-to-face meetings and telephone conferences from 2013 to 2017 within the context of the ECRIN Integrating Activity (ECRIN-IA) project.

Results: Many nutrients occur in multiple forms that differ in biological activity, and several factors can alter their bioavailability which raises barriers to their assessment. These include specific difficulties with blinding procedures, with assessments of dietary intake, and with selecting appropriate outcomes as patient-centred outcomes may occur decennia into the future. The methodologies and regulations for drug trials are, however, applicable to nutrition trials.

Conclusions: Research on clinical nutrition should start by collecting clinical data systematically in databases and registries. Measurable patient-centred outcomes and appropriate study designs are needed. International cooperation and multistakeholder engagement are key for success.

Keywords: Randomised clinical trials, Evidence-based clinical practice, Evidence-based medicine, Assessment, Specific barriers, Nutrition, ECRIN, European Clinical Infrastructure Network

SEARCH | SUBMIT MANUSCRIPT | SUBSCRIBE | ALL ARTICLES | PUBLISHED VERSION

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AN INTERNATIONAL REVIEW JOURNAL

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PMCID: PMC5502870
PMID: 28710141

Perspective: Improving Nutritional Guidelines for Sustainable Health Policies: Current Status and Perspectives

Paolo Magni,[1] Dennis M Bier,[3] Sergio Pecorelli,[4] Carlo Agostoni,[2] Arne Astrup,[5] Furio Brighenti,[6] Robert Cook,[7] Emanuela Folco,[8] Luigi Fontana,[9,10] Robert A Gibson,[11] Ranieri Guerra,[12] Gordon H Guyatt,[13] John PA Ioannidis,[14] Ann S Jackson,[4] David M Klurfeld,[15] Maria Makrides,[16] Basil Mathioudakis,[17] Alessandro Monaco,[8] Chirag J Patel,[18] Giorgio Racagni,[1] Holger J Schünemann,[13] Raanan Shamir,[19] Niv Zmora,[20] and Andrea Peracino[8]

[1]Department of Pharmacological and Biomolecular Sciences, and
[2]Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico, DISCCO, Università degli Studi di Milano, Milan, Italy;

A large body of evidence supports the notion that incorrect or insufficient nutrition contributes to disease development. A pivotal goal is thus to understand what exactly is appropriate and what is inappropriate in food ingestion and the consequent nutritional status and health. The effective application of these concepts requires the translation of scientific information into practical approaches that have a tangible and measurable impact at both individual and population levels. The agenda for the future is expected to support available methodology in nutrition research to personalize guideline recommendations, properly grading the quality of the available evidence, promoting adherence to the well-established evidence hierarchy in nutrition, and enhancing strategies for appropriate vetting and transparent reporting that will solidify the recommendations for health promotion. The final goal is to build a constructive coalition among scientists, policy makers, and communication professionals for sustainable health and nutritional policies. Currently, a strong rationale and available data support a personalized dietary approach according to personal variables, including sex and age, circulating metabolic biomarkers, food quality and intake frequency, lifestyle variables such as physical activity, and environmental variables including one's microbiome profile. There is a strong and urgent need to develop a successful commitment among all the stakeholders to define novel and sustainable approaches toward the management of the health value of nutrition at individual and population levels. Moving forward requires adherence to well-established principles of evidence evaluation as well as identification of effective tools to obtain better quality evidence. Much remains to be done in the near future.

Keywords: food, genetics, microbiome, nutritional status, personalized nutrition

M.RUTHSATZ

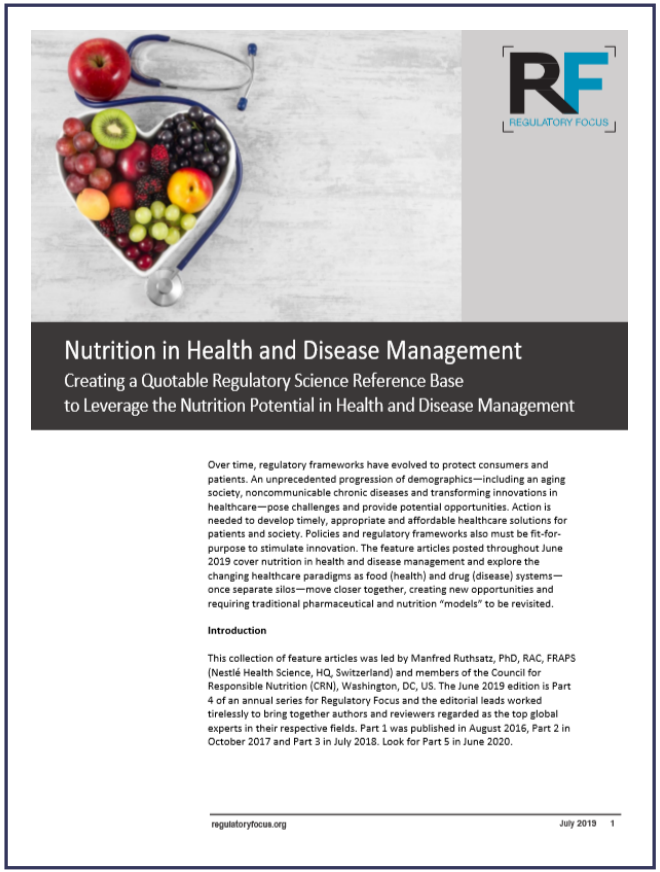
RAPS Regulatory Focus: “Nutrition in Health & Disease Management” Annual Series 2016-2020

- Elevate the Role of Nutrition in Health & Disease Management
- Leverage Regulatory Science, Build Awareness
  - Create Bridges with Multiple Stakeholders
  - Stay Abreast of Latest Trends in Nutrition in Health
  - Steadily Improving the State of Nutrition
- Next Edition: June 2020 (submission deadline: April)

  ➔ If interested, let me know by end of 2019

  https://www.raps.org/news-and-articles/news-articles/2019/7/nutrition-in-health-and-disease-management

  ➔ **Here you find also the links to all Reference Articles from 2016-2019**



RF REGULATORY FOCUS

Nutrition in Health and Disease Management

Creating a Quotable Regulatory Science Reference Base to Leverage the Nutrition Potential in Health and Disease Management

Over time, regulatory frameworks have evolved to protect consumers and patients. An unprecedented progression of demographics—including an aging society, noncommunicable chronic diseases and transforming innovations in healthcare—pose challenges and provide potential opportunities. Action is needed to develop timely, appropriate and affordable healthcare solutions for patients and society. Policies and regulatory frameworks also must be fit-for-purpose to stimulate innovation. The feature articles posted throughout June 2019 cover nutrition in health and disease management and explore the changing healthcare paradigms as food (health) and drug (disease) systems—once separate silos—move closer together, creating new opportunities and requiring traditional pharmaceutical and nutrition “models” to be revisited.

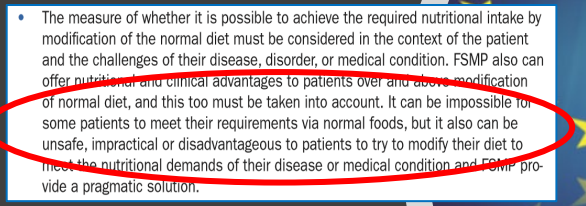
Introduction

This collection of feature articles was led by Manfred Ruthsatz, PhD, RAC, FRAPS (Nestlé Health Science, HQ, Switzerland) and members of the Council for Responsible Nutrition (CRN), Washington, DC, US. The June 2019 edition is Part 4 of an annual series for Regulatory Focus and the editorial leads worked tirelessly to bring together authors and reviewers regarded as the top global experts in their respective fields. Part 1 was published in August 2016, Part 2 in October 2017 and Part 3 in July 2018. Look for Part 5 in June 2020.

regulatoryfocus.org July 2019 1

Optimal Nutrition Care for All (ONCA) Campaign

- Aligned behind a simple/straightforward goal:
  Malnutrition Risk Assessment plus
  Implementing appropriate Nutrition Care
- Multi-stakeholder Partners
  in 18 Countries (incl. Turkey):
  Patient, HCP, Payers,
  Industry … Associations



Nutrition4Future©: Health & Disease ➔ Call4Action

Nutrition Challenges **Nutrition Opportunities & Solutions**

Why citizen-driven research strategies

20th century

- Cure
- Religion of the Average
- "We take good care of you"
- You are either sick or healthy
- Reductionist
- Knowledge imperative
- Certainty / uncertainty

21st century

- Prevention
- Uniqueness of the individual
- "I take good care of myself"
- Focus on resilience
- Appreciative of complexity
- Learning imperative
- Curiosity

Gaston Remmers
(g.remmers@habitus.nu)

Nutrition4Future©: Health & Disease ➔ Call4Action

Nutrition Challenges

- **NCDs: Treatment plus Prevention (IP; ROI?!)**
  - Population-Based plus Personalized Approaches
  - Health & Disease Continuum: Define Patient?!
  - Disruptive Diagnostic Technologies (omics, apps…), Speed, Social Networks, e-Commerce
- **Regulatory Category Requirements**
  - Based on Science & Other Legitimate Factors
  - Interpret technological hurdles proportionally; Evidence (Un-)Certainty (Microbiome)
- **Unmet Need: Patient Access & Benefit 1st**
  - Need Factor (Timeliness!): FSMPs save lives ➔ Product unavailability for a patient: a safety issue
  - Reimbursement Schemes: Hospital & out-patient/ home care; Kcal vs. Value-based; Tube & ONS

Nutrition Opportunities & Solutions

- **Essential in health & disease management**
  - Nourishes & physiologic; safe/no-low risk*; adherence (flavour, texture) & cost-efficient
  - Can be personalized, sole solution or partner to drugs
  - Gaps: Supplements in addition to a varied, balanced diet
- **«Nutrition4Future» Regulatory Framework ➔ Evolution or Paradigm Shift?**
  - Can't afford & lose low-risk healthcare solutions («ROI»): interpret, converge & use «precautionary» approach wisely
  - «21st Century» Evidence**: Targeted Solutions
  - Consider disruptive facts & increase incentives (IP; ROI)
- VUCA World ➔ Implement what we know & Multi-stake-holder dialogue behind common Nutrition4Future goal

**cf. Drug risk-benefit approach // **RCTs (always practical, ethical? most NCDs are rare!), N-of-1, Observational Studies, RWE*

3rd Food and Nutrition Policy Conference

Dr Manfred Ruthsatz, Nutrition & Healthcare

Ankara, December 5, 2019

Biography – Dr Manfred Ruthsatz

- Manfred's expertise & passion is to build and strengthen relations between multiple stakeholders, such as regulators, policymakers, manufacturers, academia, healthcare professionals & patient NGOs to change people's lives through nutrition

- He lead advocacy, regulatory, safety & quality, reimbursement & health economics functions in nutrition & healthcare industries (Nestlé Health Science, L'Oréal-innéov, Abbott, Roche), providing him with strategic experience in nutrition, botanicals, biotech, drugs, devices, cosmetics. He was a prior NIH Visiting Fellow (cancer virology; molecular biology) & served as a reviewing pharmacologist @ the US-FDA (CDER)

- He maintains a long-standing recognition on governing, scientific, faculty & editorial boards (ISDI, VP; RAPS; ERNA; MIRRI; European Botanical Forum, presidency) & lead global/regional medical nutrition/dietary/food supplements association working groups

- He published & presents frequently to governments, associations & at global nutrition & healthcare conferences in Europe, the Americas & Asia, on healthcare & safety topics, incl. personalized nutrition, healthy aging, disease-related malnutrition, microbiome, food-drug borderline, global convergence, multi-stakeholder engagement & policymaking

- He upholds Board Certifications in Pharmacy, Toxicology (DABT), Regulatory Affairs (RAC) & received the rare distinction as a Regulatory Affairs Professionals Society (RAPS) Fellow & as Competent Communicator (CC) from Toastmasters International

Based in Vevey, Switzerland; Contact: ManfredRuthsatz@gmail.com & LinkedIn