WN *Feedback*

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Development. Malnutrition. Vitamin A
Let food be our medicine

Access May 2010 Michael Latham The great vitamin A fiasco here
Access June 2010 letters in response to Michael Latham here
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Access November 2010 letters in response to Michael Latham here
Access October 2010 Keith West, Rolf Klemm, Alfred Sommer on Vitamin A here
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Access December Update on Vitamin A here
Access December Feedback on Vitamin A here



Editor's note

Current dominant practice to prevent vitamin A deficiency is universal supplementation of populations of young children identified as being at risk (picture above). The contrary view is that dominant policy and practice should be food-based (including breastfeeding, picture below). In May 2010 *WN* published Michael Latham's 'The great vitamin A fiasco'. This strongly criticises current practice. *WN* then published many letters from scholars, policy-makers, field workers, and others, almost all supporting Michael Latham, and also a commentary from scholars at Johns Hopkins School of Public Health upholding current practice. In November *WN* published 'Let food be our medicine' by John Mason and colleagues, following their October paper in the *International Journal of Epidemiology*. This supports the food-based approach. See above for links. Further letters are below.

Vitamin A
Breast is best



Breastfeeding is the single most effective way to prevent undernutrition and deficiency in infants and young children. This, and promotion of fresh locally produced food, is where the priority needs to be

Elisabeth Sterken writes:

The call for a rethinking of vitamin A policies (1) given that efficacy trials do not show that vitamin A supplementation for infants and young children reduces mortality, (2) is important and timely.

My country of Canada is the major supplier of vitamin A capsules throughout the global South. The Micronutrient Initiative (MI), a programme established in 1992 under CIDA, the Canadian International Development Agency (3), claims a coverage of 146 million children annually, 8 billion capsules distributed since 2,000, 75 per cent global coverage, and a resulting reduction in young child mortality of anywhere from 23 to 30 per cent. The justification for the programme is based on data on mortality reduction published two decades ago in 1993 (4), by George Beaton and co-authors. Since then MI has not used other primary data to demonstrate efficacy.

The analysis published in *WN* in 2010 by Michael Latham (5), and the recent analysis by John Mason and co-authors (1), mean that Canada's policies on supplementation, and indeed the whole rationale of the Micronutrient Initiative, need review. The implementation of the MI programme (6) is based on a procurement and distribution system. There is no research component to confirm effectiveness, nor is there any monitoring of risks. Reporting and implementation training is restricted to achieving coverage, with the objective of 80 per cent coverage as measure of success.

The Micronutrient Initiative's total 2012-2013 budget for micronutrient distribution was $ 47.5 million with about half spent for vitamin A. Is this financial cost and the complex infrastructure justified, without clear evidence of efficacy, and success gauged only as achievement of 75-80 per cent global coverage?

Box 1

Interventions that reduce annual child mortality worldwide

Intervention	thousands	% prevented
Breastfeeding	1,301	13
Insecticide-treated materials	691	7
Complementary feeding	587	6
Clean delivery	411	4
H. influenzae type b vaccination	403	4
Zinc supplementation	351	4
Clean water	326	3
Vitamin A supplementation	176	2
Tetanus toxoid vaccination	161	2
Nevirapine and replacement feeding	150	2
Measles vaccination	103	1
Antimalarial treatment in pregnancy	22	1
Newborn temperature management	0	0
Antibiotics for PROM	0	0

The Lancet Infant Survival series, 2003 *(7)*

In the context of poverty and malnutrition, can the costly inputs to provide a single nutrient be justified? A shift in donor-driven, product-based programming is difficult to achieve. Such systems have inherent conflicts of interests. These include 'public-private partnerships' involving manufacturers and governments, liable to resist any change in funding priorities.

A shift to evidence based cost effective programming is essential. *The Lancet* 2003 Child Survival series (7) examined a number of interventions to reduce child mortality that put breastfeeding at the top of the efficacy list. (See Box 1). Interventions to support breastfeeding practices were shown to have a potential of reducing under-5 mortality by 13 per cent compared to vitamin A at 2 per cent.The Beaton *et al* 1993 study is cited in support of the 2 per cent. This figure would be lower in the light of no-effect efficacy trials. Yet breastfeeding support programmes are to this day not given proper priority as the most effective and least costly means to save children's lives. The Micronutrient Initiative mentions breastfeeding as being important, yet there is no integration of breastfeeding support into its distribution programme. Globally the rate of exclusive breastfeeding for the first six months remains below target (8). The rate was at 37 per cent in 2000 and increased a mere 4 per cent to 41 per cent by 2012.

There are of course sustainable ways to gain adequate vitamin A status. Promotion and support for best breastfeeding practices and family food-based complementary feeding should be the primary intervention for all programmes that aim to improve infant and young child nutrition status and to reduce mortality from many causes. Breastfeeding provides the necessary vitamin A (250IU/100ml), with all the other nutrients present in breastmilk, which also gives critical immunological protection.

In parts of the world where vitamin A undernutrition is prevalent, targeted post-natal maternal supplementation integrated into post-natal care and nutrition education is the preferred intervention – feed the mother so she can feed the child.

Sustained breastfeeding combined with interventions to improve complementary feeding starting at 6 months adds another 6 per cent reduction in under-5 mortality (Box 1). Education campaigns on preparation of energy- and nutrient-rich local foods are also low cost and have been demonstrated to be highly effective. There is no lack of foods rich in vitamin A, such as red palm oil used in soups and stews, cassava leaves, spinach, pumpkin, squash, yams, mangoes, papaya, peppers and a few more expensive animal-based foods such eggs, liver, fish oils, butter and eggs.

Calling for a rethink is a way forward for needed change. Such change should be based on the principle of the human right to adequate culturally appropriate food. The support for mothers to optimally feed themselves and their children, combined with accessible preventive care, is the first and foremost way to address the appalling rates of malnutrition and related deaths.

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Vitamin A
Diverse diets are best

Kraisid Tontisirin and Lalita Bhattacharjee write:

At the International Conference on Nutrition (ICN2) last November, the global community reiterated food as the foundation of nutrition. The state of hunger in developing countries overall has improved since 1990, falling by 39 per cent according to the 2014 Global Hunger Index. But the level of hunger in the world is still 'serious,' with 805 million people continuing to go hungry, according to estimates by the UN Food and Agriculture Organization. Micronutrient malnutrition persists as a form of hidden hunger, the effects of which are often overlooked.

Micronutrient deficiencies rank among the top 20 risk factors for morbidity and impaired quality of life worldwide, with particular burdens falling on populations in poor countries, on children, and in the case of iron deficiency on women of childbearing age (1).

At least half of children worldwide aged 6 months to 5 years suffer from one or more micronutrient deficiencies, and globally more than 2 billion people are affected (2). These commonly-occurring micronutrient deficiencies arise largely due to a habitually low dietary consumption of micronutrients in relation to requirements, recurrent infections coupled with an unhygienic environment, and lack of clean water supplies. This situation is often seen in food-insecure households in much of the developing world.

Need for diversification

Increasing dietary diversification is the most important strategy in providing a wide range of micronutrients. Dietary diversification including food-to-food enrichment and food fortification are strategies that need to be promoted to scale, to address the problems of micronutrient deficiencies in the long term. It is also recognised that in certain circumstances there is a need for supplementation in high-risk populations. To this end, a comprehensive policy approach to addressing micronutrient deficiencies should be adopted, rather than addressing deficiencies of micronutrients on an individual basis.

An intervention strategy that is sustainable and that simultaneously combats multiple micronutrient deficiencies is what is needed. Interventions that address population-level undernourishment, child underweight and stunting and child mortality need to be used to guide strategic policy, along with specific criteria to measure progress. The causes of high under-5 mortality in resource-poor settings are complex (2). In particular, concerted efforts with a focus on under-5 mortality decline need to target the individual needs and welfare of mothers and their children. Better maternal and child nutrition is therefore crucial to reduce mortality and improve health.

Need for integrated strategies

What is needed is a stronger commitment to promoting the implementation of integrated strategies employing a community-based approach which will empower communities to be more self-reliant towards addressing their nutritional problems (3). Governments need to take the lead in bringing to public attention the magnitude of the micronutrient deficiency problem, its causes and effects, and possible strategies. A well-developed policy environment could facilitate and support small-scale farming systems that maximise outputs of micronutrient-rich foods, particularly for subsistence-farming households. Agriculture and food policies should also be formulated to promote and support home gardens and small livestock production for the explicit purpose of increasing the household consumption of micronutrient-rich foods along with support for locally produced micronutrient-rich processed foods.

The adoption of 'desirable' dietary patterns that meet micronutrient needs could be used in the formulation of agriculture policies and programmes. In particular, activities need to be designed to establish sustainable food systems to promote healthy diets and impact nutrition, especially in the first 1000 days of life. With the challenges of dietary diversity in habitual diets, nutrition needs to be mainstreamed across agriculture, food, health, education and women's development programmes.

Need for education

Given the effect of maternal education on child survival, and that educated mothers are more likely to receive antenatal care and are more capable of gaining access to health care, it is critical that education and functional literacy programmes are linked to the delivery of integrated nutrition services. These can serve as entry points for supporting nutrition improvements and boosting the scale, coverage and benefits of nutrition-specific interventions. Lessons learned from community-based programmes in Asia (4) show that in order to be effective, the programme must be adopted at national level and implemented at community level. Linking community development policies to national programmes for the alleviation of poverty, food insecurity and malnutrition, with an emphasis on increasing the variety of foods consumed, probably amount to the best strategy for addressing micronutrient malnutrition sustainably and reduction of child mortality.

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Vitamin A
Not too fast, please



In Ethiopia and in other countries, vitamin A supplementation programmes for infants and young children are part of integrated child health care services. These need to be considered as a whole

Bjorn Ljungqvist writes:

I am a practicing public health nutritionist who has been involved in designing, managing and evaluating efforts to address problems of malnutrition for the last 40 years or so. I was privileged to be part of the process that led to the formulation of the 1990 UNICEF nutrition strategy, including the 'conceptual framework for

analysing causes of malnutrition' which is well-known and (almost) universally adopted. What is less well-known and applied is the fact that this analysis has to be an integral part of an ongoing Assessment-Analysis-Action, 'Triple-A' cycle, where people, themselves supported and advised by agents they trust, are able to do the right things to ensure adequate nutrition provisions and status in their children, household members and themselves. Since actions to ensure adequate nutrition vary by time and age and circumstance, there can never be a 'package' of interventions that eliminates all problems of malnutrition.

Duty of care

I start off by stating all this in order to make it clear where I come from. I never accepted 'solutions defining the problems' but in supporting people to better understand their situation and to be able to claim their rights and the rights of those for whom they are responsible.

I always doubted that universal distribution of vitamin A capsules would automatically lead to a reduction of child mortality rates by 23 per cent, as initially claimed. But I did believe in those who claimed that vitamin A deficiency in children under 5 carries a serious risk of morbidity, mortality and potentially other impairments and that it should be our duty to safeguard children from this risk.

I further accepted the guidance that the best way to assess the risk of vitamin A deficiency was through measurement of vitamin A deficiency symptoms (including serum retinol levels) in child populations, and that when these are above defined public health risk levels then we need to inform the communities and the caretakers about this risk and provide means for them to protect their children.

From that perspective I was happy when high dose vitamin A capsules (VAC) became available, affordable, and carrying limited risk when given to small children, and I have spent a considerable part of my life as a nutrition programmer to put in place modalities that helped to inform child caretakers when there were risks of vitamin A deficiency and about their right to access means to prevent such risks in their children. Those means included participation in VAC supplementation, accessing fortified foods, and other food-based actions. until risks were minimised.

Need for caution

From this perspective I find the paper by John Mason and his co-authors, as well as earlier contributions from Michael Latham and others (accessible above), a very timely call for critical re-assessment of the assumptions and criteria on which we have based vitamin A supplementation programming. But I do not necessarily find their conclusions and some related comments to be very helpful. These do not make me, personally, call for an immediate stop to VAC supplementation programmes.

I believe we, firstly, need to agree on the risks of childhood vitamin A deficiency and how to establish these. Do we agree that the recently issued WHO guidelines are correct and acceptable? Or should we call for a renewed review of available evidence? If we agree to accept the existing guidelines – at least for the time being – then we need to look into our nutrition programming context and confirm if, indeed, there is reasonable evidence that the serum retinol levels and/or the clinical signs of vitamin A deficiency are above the recommended 'action levels'. If John Mason and his colleagues and others who share their views are shown to be correct in claiming that biannual provision of high dose vitamin A capsules are not providing sufficient protection (this conclusion is contested), then we need to consider complementary and/or alternative approaches as proposed by other commentators.

In Ethiopia, where I am presently working, the government and partners are in the process of moving from a (rather successful) outreach approach to a routine approach for providing VAC supplementation, in order to cut down on the high implementation costs associated with biannual campaign/outreach provisions of the capsules. This is likely to become successful due to the effective roll-out of the health extension programme here in Ethopia, but it may be more difficult to maintain acceptable access to VAC in other countries.

In this context it is important to point out that the major cost in Vitamin A capsule supplementation is operational (community mobilisation, logistics and staff emoluments), amounting to an average of $US 1-2 per child, whereas the cost of the capsule itself is only $US 0.02. The argument that VAC supplementation is a major opportunity for corporate profit is, therefore, not true. However, it is true that discontinuation of VAC supplementation if and when appropriate, would lead to considerable savings that might be used for more 'urgent' nutrition actions.

We need to be aware though, that in most countries the biannual VAC community outreach activities are normally combined with other critical child health services, like de-worming, immunisation, distribution of insecticide-treated bed-nets, seasonal malaria chemoprophylaxis, screening for referral to therapeutic feeding of children with severe acute malnutrition, and for health and nutrition education and community dialogue. Hence, an important opportunity for (isolated) communities to access critical health and nutrition services could be lost. The cost of finding alternative ways to respond to such needs must also be considered in deciding when to discontinue current programmes of VAC outreach supplementation.

Let's not jump to conclusions

I welcome the contribution by John Mason and his co-authors as further stimulation of serious discussion around the effectiveness and limits of VAC and other 'nutrition specific' interventions. I hope this will lead to stronger emphasis on participatory/ human rights-based approaches, as well as dietary improvements that if successful

would eliminate the need for VAC supplementation. However, we do need to recognise our own responsibility to contribute to the right(s) decisions, and not prematurely jump to conclusions that may cause more harm than help.

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Ljungqvist B. Vitamin A. Not too fast, please [Feedback]. World Nutrition January-February 2015, ***6,*** *1-2, 96-99*

The New Nutrition
The best start for children

Access Public Health Nutrition September 2005 on the New Nutrition here
Access Public Health Nutrition September 2005 The Giessen Declaration here
Access Nov 2014 Geoffrey Cannon, Claus Leitzmann on the New Nutrition here



Some of the Giessen participants. Co-convenors Geoffrey Cannon, Claus Leitzmann are back, left and right. International Union of Nutritional Sciences presidents 2001-2005 and 2009-2013 Mark Wahlqvist and Ibrahim Elmadfa are front, left, and back, second from left. Benefactor the Baroness Mariccia Zerilli-Marimò is front, centre Massimo Pettoello-Mantovani is front, right. Participants included Barrie Margetts, now president, World Public Health Nutrition Association

Massimo Pettoello-Mantovani writes:

Ten years have passed since April 2005, when a three-day workshop was convened in the Schloss Rauischholzhausen facility of the University of Giessen in Germany, to discuss the definition, principles, dimensions and domains of nutrition science. The meeting was held under the auspices of the presidents of the University of Giessen,

the International Union of Nutritional Sciences and the World Health Policy Forum. Our task was to shape the science as taught and practiced to face the facts of this 21st century. The *New Nutrition Science* project (1), the outcome of the meeting, has raised the awareness of professionals working in nutrition science and in food and nutrition policy. We are all now more aware of the importance of taking an integrated biological, social and environmental approach when confronting the challenges of a rapidly changing world.

Since the conceptual framework of the New Nutrition was agreed (2), the world has significantly changed. The general social, economic, environmental and other transformations that were foreseen and analysed a decade ago in Rauischholzhausen at the beginning of the new millennium, have continued to evolve. The *New Nutrition Science* conceptual framework enables professionals and policy makers to take a proper approach in the field of nutrition considering its important implication for populations, regardless of any geographical area and age group.

The European Paediatric Association, the Union of 45 major National European Paediatric Societies and Associations (EPA-UNEPSA) (3), recognises the importance of adequate nutrition during infancy and childhood as a factor essential to ensure the growth, health, and development of children to their full potential. As Secretary General of EPA-UNEPSA, I am more than happy to let WN readers know that the concepts and principles of the *New Nutrition Science* as applied to the ages from birth to adolescence, have been of great importance during recent years. The social, economic and environmental dimensions proposed in the *Giessen Declaration* have assisted pediatricians to consider a different, new approach to nutrition in their practice and studies.

The benefits for infants and children

From the time of its first formulation in 2005, the concept and principles of the *New Nutrition* remain central, crucial and influential. In my experience and judgement, most key players have adopted the multi-dimensional social, economic and environmental as well as biological and behavioral framework. If we acknowledge that we have a duty towards those who are not yet born, and that this duty is not to just give them existence (4), but also to ensure them good health and well-being, we need further to develop and progress the application of the *New Nutrition* approach in pediatrics during the years to come. I am pleased to be able to report that the concepts and vision of the *New Nutrition Science* will be discussed and proposed for endorsement at the annual General Assembly of EPA-UNEPSA in 2015.

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The New Nutrition
Principles for this decisive century

Mark Wahlqvist writes:

The *WN* commentary setting out a set of principles for nutrition science in this century published in November is an incredibly coherent and powerful document. It builds on the *Giessen Declaration*, and the principles of a *New Nutrition Science* published in *Public Health Nutrition* in 2005, under the auspices of the International Union of Nutritional Sciences (of which I was then President), following the Giessen meeting in which I participated. Geoffrey Cannon and Claus Leitzmann have updated and developed them as a platform for this 21st century.

This is the century which will almost certainly be decisive for humankind and for the liveability of planet Earth. Now is the moment when we must act in accordance with these principles, as nutrition scientists, and as citizens-at-large, for our well-being, health and survival. There are a growing number of people involved professionally with the food and health systems and across the disciplines of environmental, societal and economic science, ready to put their names to and act on these principles. What we need are practitioners and implementers, in order to move from them into action, in ways that engage and work with nations, regions, communities and households all over the world. We could start by enlisting all those prepared to commit time and skill, in local and global networks of *NNS*-Partners-On-Line.

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*Wahlqvist M. The New Nutrition. Principles for this decisive century [Feedback] World Nutrition January-February 2015, **6**, 1-2, 101*

The New Nutrition
Dimensions for this dynamic century

Access Public Health Nutrition September 2005 on the New Nutrition here
Access Public Health Nutrition September 2005 The Giessen Declaration here
Access Nov 2014 Geoffrey Cannon, Claus Leitzmann on the New Nutrition here

Hélène Delisle writes:

It is a great idea to revitalise the *Giessen Declaration* concerning the *New Nutrition Science* (see links above), a project in which I participated at a workshop held in Barcelona in 2006. And it is timely too, with the second International Conference on Nutrition recently held in Rome, and with the current release of the post-2015 Agenda of the United Nations (1).

This Agenda, for which UN Secretary-General Ban Ki-moon has taken special responsibility, has a wonderful title: *The Road to Dignity by 2030*. Nutrition is very present in two of the six elements – 'People: A healthy life', and 'The Planet: sustainable food systems'.

It is amazing how the *New Nutrition Science* conceptual framework expressed in the *Giessen Declaration* has been taken up and followed since it was published, and how, while perhaps visionary in 2005, its thesis is now so clearly in line with today's health, social and environmental concerns and challenges.

Here follow comments, some critical, on the *WN* commentary by Geoffrey Cannon and Claus Leitzmann (again, see link above).

In the introduction, why is coronary heart disease given as the only exception to the inability of nutrition to control chronic disease? Successful interventions to prevent chronic diseases are now well documented. To name just three: salt reduction, in Ghana (2) and diabetes prevention in India and China (3,4).

Definition and dimensions

In the 'definition and dimensions' section of the commentary, clinical nutrition is identified as a subset of public health nutrition. I like that! Alternatively, how about human nutrition as the master discipline, with basic, applied and public health nutrition (and dietetics) as subsets? 'Human nutrition' in short does not only refer to clinical nutrition, but also to fundamental nutrition, as long as there is a link with human beings, which is the basic criterion of the discipline.

Regarding 'dietetics', I have a different view, in contrast with the statements made. I see dietetics as the 'nutrition practice' subset of human nutrition. But yes, dietetics should be regarded as a broad natural 'philosophy' of wise and wholesome nutrition.

It would be interesting and useful to recall the features of 'wholesome nutrition' (5) which I like to refer to as 'responsible eating'. The new Brazilian dietary guidelines (6, 7) come very close to this concept.

The relationship of human beings with food is for me what distinguishes human nutrition from the basic sciences of biochemistry, physiology, metabolomics and all other '-omics' sciences that are related to but are not at the core of human nutrition. The following is how I see the new and simple definition of nutrition: 'A science addressing the many dimensions of the relationship of human beings with their food, and dealing with personal, population and planetary health and well-being'. With the recent momentum of nutrition, several fundamental scientists have suddenly pretended that they were in the field of nutrition, in order to reap the benefits of this momentum. They have, for example, invaded university schools, departments, faculties, or programmes of nutrition.

The four dimensions of the nutrition science – biological, social, economic and environmental – have stood the test of time and have to be reiterated. The 'interactions' concept within *The Giessen Declaration* is of utmost importance, that is, on the one hand, interactions among food systems, food and drinks, and nutrients and other constituents of foods, and on the other hand, interactions between these and all relevant biological, social, economic and environmental systems. In a way, the simple definition above is broadened to include the several dimensions.

As a science, nutrition has to have boundaries, and it is these interactions between health (of biological, environmental, and social systems) and foods, that set the boundaries of nutrition. To express this a little differently, nutrition is at the interface of the four dimensions, each one representing in itself a complex system: agro-food, health, socio-economic and environmental.

As in the case of food, nutrition itself may be perceived as a complex multi-system. Ross Hammond and Laurette Dubé propose that food and nutrition security is driven by complex underlying systems, and that both research and policy in this area would benefit from a systems approach (8). They present a framework for such an approach, examine key underlying systems, and identify trans-disciplinary modelling tools that may prove especially useful. They include in their framework the health/disease system, the ecosystem, and the agro-food system. The economics system, however, is missing. A systems approach has also been applied to the understanding of food choice (9).

Purpose and principles

The usual purpose of a science is to generate knowledge and understanding of the phenomena under study, and to act upon them. Regarding nutrition practice or research, the purpose may be sustainable and equitable food and nutrition security for the health of the people, the environment and the economy.

In the *New Nutrition* paradigm, equity – equal access to, and power over, resources – sustainability and interdependence are mixed in the overarching concepts. These could be expressed more clearly. The 'evolutionary principle' refers to the policy of attempting to maximise human growth. This concept is now long gone. Should there not be instead something that conveys the idea of adapting to scientific advances (not to use the buzz-phrase 'evidence-based')?

With the unfolding of nutrigenomics, for instance, there may also be an evolution towards individualised nutrient requirements and diets according to genotype, and not only phenotype. It may not be widely applicable at population level, but whether we like it or not, it is coming. The evolutionary principle may also involve additional steps: from the search of food to secure supplies, then to secure nourishing food, and then to secure and sustainable diets.

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The New Nutrition, Brazilian dietary guidelines
We need to get real

Access November 2014 Geoffrey Cannon, Claus Leitzmann on the New Nutrition here
Access the 2014 Dietary Guidelines for the Brazilian Population here
Access December 2014 Patricia Jaime on the new Brazilian dietary guidelines here

Barry Popkin writes:

Here I respond to two *WN* contributions both of which can be accessed above. The first, published in the November issue, is the set of principles set out by two colleagues and friends concerning the *New Nutrition Science*, on behalf of the participants at the 2005 Giessen workshop. This contains many truths, but also misses some of the key factors that are governing farmers and the food system of today. I want to take on just one point from this rather large treatise on where we want to place nutrition within our planet and its survival. Above all else I want us to push for science to dictate where we go and not ideology alone.

The second is the new Brazilian dietary guidelines, outlined last month in the December issue. I applaud them, and their attempt to shift everybody back to a more food-based diet. I can eat and follow their dictates, and I do, but can the planet do so, without a major revolution in income and food supply?

Agriculture defined our modern food system

Before the last two centuries, everywhere in the world, what was grown was what was eaten. Science's role in the evolution of the food and agriculture system was minimal. This began to change in the 1800s, with many discoveries ranging from Mendelian genetics to nitrogen fertiliser, to the beginnings of scientific agriculture centres to focus on both food and cash crops.(1) Knowledge shifted rapidly, and the basis for the modern agricultural system was truly a collective push from the scientific community.(2)

Nutritionists had a role in all this. Protein and animal protein were seen as critical parts of diets, and the scientists at that time were hand in hand with rapidly industrialising agriculture in pushing for cheaper animal source foods along with surplus of grains as the major staples.

Along the way, other critical components of our food supply were ignored. Here nutritionists did not play the major role. They supported the lead of economic development and agriculture agencies across the globe which took the protein approach and ran with it The prevailing and dominant policy was based on getting grains and animal source foods into food supplies across the globe, to absorb rural employment and provide animal proteins.

At the end of World War 2, trillions of dollars began to be invested in higher income countries, and also in creating modern research-based agricultural systems across the globe. Funding from governments, multilateral agencies and foundations all focused on an animal food-based system. In the 1950s this was thought to be appropriate. But in the 2000s this approach has been agreed as unsustainable as well as unhealthy.

It has not yet been possible to correct this distortion of what has become a global industrial food system. It has its own built-in force to keep in going as it is. Global, bilateral and national agencies talk about sustainability, but give minimal funding for vegetables and legumes. Besides, the influence of these various organisations and even government on the food system is increasingly diminished.

Global governance has lost much of its role

Global agribusinesses, global, national and local manufacturers, retailers and caterers are the new driving forces.(3) Global food companies have been around for a long time, as have supermarkets, but their role in our entire food system has truly shifted so they call the shots today with farmers. When – as now – retailers and food companies tell farmers what and how to grow, and system controls have been transformed, the challenge is very different than that faced in 1950 or 1960. It is creating a global food supplied based on highly processed or even ultra-processed convenient food products, for sure. The big issue here is, can this engine be slowed down or stopped?

Food versus ultra-processed food products

But does the scientific community and do policy-makers yet have the solid evidence to justify a whole global shift? In the nutrition field, this is one battle already being fought that needs more science. People in fully industrialised countries such as the US characteristically consume diets containing disproportionate amounts of processed food which is increasingly ready-to-eat or ready-to-heat, and highly convenient. Such dietary patterns are increasingly becoming global, as many in the agricultural economics field, including myself and colleagues, have noted in various studies.(4)

An issue here is the disparity between those of us who eat real food, and the vast majority of the higher income and increasingly lower income world that eat processed food. My colleagues and I can afford the time and money to eat real food, and to cook and savour it. But is this approach feasible on a global scale? And is it the only way forward, or are we pushing the wrong buttons?

Scientific questions are yet to be answered. Michael Pollan and Marion Nestle in the US, and the *Food System* team convened by Carlos Monteiro from the University of São Paulo in Brazil, and others, state that it is the 'food-like substances' or 'ultra-processed food products' increasingly being consumed worldwide, that are the global health disaster. But there are no studies that compare healthier processed

food-based diets (with whole grains, minimal refined carbohydrates, less added sugar and sodium and healthier fats, with some real food included) with diets based only on real foods. So how can this indictment be sustained?

In other words, will hyper-palatability and all the chemical ingredients that seduce consumers with even healthier processed food disrupt our appetite controls, so that we professionals and policy-makers must push for a real food-based diet and not try to reform the extant diet? Without a series of studies on this, I really do not know if we should look with disdain at the current food system and its products, rather than try to work within it, while at the same time also attempting to increase access for all real food in an environmentally sustainable and friendly manner.

Reform or revolution?

To put this another way, should we try to reform the current dominant industrial food system? Or should we advocate for tearing it asunder, and to go back to real food only? This second choice is probably impractical but it is an essential scientific question that requires many studies. So far, any consensus that populations should eat real food only may be wrong, or it may be the only answer.

However, human physiology has changed as populations shifted from physically active ways of life to sedentary ones across the globe (5). At the same time food systems shifted. It is impossible to know how much metabolic dysregulation is caused by this shift in physical activity. Even real food-based diets at population level may not work unless new higher levels of physically activity can be engineered. Again this is an issue we professionals need to discuss and consider.

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[*Feedback*] *World Nutrition January –February 2015, **6**, 1-2, 105-107*

World systems and supplies

Yes, we do need to get real

Access the 2014 Dietary Guidelines for the Brazilian Population here
Access December 2014 Patricia Jaime on the new Brazilian dietary guidelines here

Carlos Monteiro replies:

This response to my long-standing colleague and friend Barry Popkin, with whom I have been working for 20 years (1-3),concerns two doubts he raises in his letter. First, he doubts that diets based on ultra-processed snacks, drinks and ready meals, now largely predominant in the US where he lives, are or must necessarily be less healthy than diets based on real foods and freshly prepared dishes and meals. Second, he doubts that the global trend for food supplies and dietary patterns similar to those found in his country can be stopped or reversed.

These two points relate to the new official Brazilian dietary guidelines, which aim to promote long-established traditional diets based on real foods, and to stop or reverse trends toward diets based on ultra-processed products. But, because Barry did not comment specifically on these guidelines, I will not focus my response on them.An account of the guidelines by Patricia Jaime, the head of the nutrition department at the Brazilian Ministry of Health, and comments from Mark Lawrence of Deakin University in Australia, are accessible above. Instead I will focus on relevant work done here at the University of São Paulo and internationally.

Barry Popkin is a renowned scholar who for many years has worked in Asia and collaborated with colleagues in other parts of the world. Given this qualifications and experience, his general observations, rather like those made by some scientists whose knowledge is confined to high-income countries whose traditional food systems are practically obliterated, is startling.

Ultra-processed products are unhealthy

On his doubts about benefits of real foods over ultra-processed products, Barry says: 'Scientific questions are yet to be answered … the *Food System* team convened by Carlos Monteiro… state that it is the "ultra-processed food products" increasingly being consumed worldwide, that are the global health disaster. But there are no studies that compare healthier processed food-based diets (with whole grains, minimal refined carbohydrates, less added sugar and sodium and healthier fats, with some real food included) with diets based only on real foods. So how can this indictment be sustained?'

Well, in papers we have published in the *American Journal of Public Health* (4), *PloS Medicine* (5) and *The Lancet* (6) we have detailed why and how the penetration of the transnational manufacterers of ultra-processed products in the Global South (the

'snack attack'), is causing a global health disaster.We will not repeat this here.In any case, our view is shared by many including US-based investigators (7,8) and at some time by Barry himself (9).

Following the publication of the paper of which I was a co-author, 'Profits and pandemics: prevention of harmful effects of tobacco, alcohol, and ultra-processed food and drink industries' in *The Lancet,* the General Director of the World Health Organization said in her opening address at the June 2013 Helsinki Global Conference on Health Promotion:

> It is not just Big Tobacco any more. Public health must also contend with Big Food, Big Soda, and Big Alcohol. All of these industries fear regulation, and protect themselves by using the same tactics. Research has documented these tactics well. They include front groups, lobbies, promises of self-regulation, lawsuits, and industry-funded research that confuses the evidence and keeps the public in doubt. …. This is formidable opposition. Market power readily translates into political power. Few governments prioritize health over big business. As we learned from experience with the tobacco industry, a powerful corporation can sell the public just about anything. Let me remind you. Not one single country has managed to turn around its obesity epidemic in all age groups. This is not a failure of individual will-power. This is a failure of political will to take on big business.

In all countries where we have obtained nationwide representative dietary data, that part of diets supplied by ultra-processed products is more energy-dense and contains more added sugar and more unhealthy fats, and less protein, less dietary fibre, and less of most vitamins and minerals, than fresh or minimally processed foods combined with processed culinary ingredients (11-13). In Brazil we have shown that incidence of obesity is much lower in people of all ages whose diets are based on real foods, and increases linearly and strongly with the dietary share of ultra-processed products (14). Other studies in Brazil show links between consumption of ultra-processed products andthe metabolic syndrome and dyslipidemias (15,16). Ongoing research,including in the US, is showing similar findings.

But Barry is not satisfied. He says that a definitive answer would require comparison of diets based on real foods, with hypothetical diets based on reformulated ultra-processed products with some real food included. Here there are at least two problems. First, reformulation of ultra-processed products does not make these products healthy (6, 17). 'Some' extra added real foods are unlikely to make such diets healthy. Second, in real populations and real life, diets based on ultra-processed snacks, drinks and ready meals are grossly nutritionally unbalanced and disease-promoting. This should be enough to justify actions to stop or reverse the trend toward dietary patterns dominated by ultra-processed products.

Food supplies need to become healthy

Now for Barry's doubt that trends toward ultra-processed products can be stopped or reversed. His reasons are familiar. He says: 'My colleagues and I can afford the

time and money to eat real food, and to cook and savour it. But is this approach feasible on a global scale?'

Of course it is! Although the sales of ultra-processed snacks, drinks and ready-meals are increasing globally (3), it is only in some high-income countries, including the US (18), the UK (19) and Canada (20), that food supplies and dietary patterns are dominated by and probably saturated with these products.

In Brazil (11, 20) and in several Latin American and European countries (ongoing research), and very likely in most countries in Africa and Asia, dietary customs and patterns are still based on minimally processed foods and freshly prepared dishes and meals made with these foods, and smallholders and family farmers are responsible for most of the food supply. Besides, as Barry himself says, most of the world's population ate real food, made into meals, until recently in history.

Stopping or even reversing replacement of dietary patterns based on natural foods and freshly prepared meals by ultra-processed snacks, drinks and ready meals will require strong changes in national food and agricultural policies and will be most difficult in countries where long-stablished dietary patterns have almost disappeared. But there is no other way to create really healthy food supplies.

Above all, this discussion concerns the social responsibility of scientists. There comes a time when scholars have a duty to think and act as citizens. There will always be research to be done, in monitoring and improving policies enacted in the public interest. At this time of unprecedented crisis, I and my co-authors would like to suggest to our esteemed friend and colleague that to persist in asking questions to which the answers are obvious, is to fiddle with figures while the planet heats.
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[*Feedback*] *World Nutrition January-February 2015, **6**, 1-2, 108-111*

Public health nutritionists
John Waterlow

Access December 2014 Geoffrey Cannon on John Waterlow here

David Picou writes:

It was good to read the celebration of the life and work of John Waterlow in the December issue of *WN* (link above). I write as John's successor as director of the Tropical Metabolism Research Unit in Jamaica. To say that my life was influenced by John would be a gross understatement. He was my mentor and lifelong friend for 59 years. His scientific achievements have been well documented and these anecdotal remarks try to describe what sort of person he was, at least in my view.

Staying in Jamaica

In 1950 John returned to Jamaica to lecture in physiology at the new University College of the West Indies, where I then was a medical student. He had invited all the medical students to a party at his home and as I entered I was handed a bottle of rum which I was instructed to share. Several bottles were given out and consumed that night. In Jamaica, rum was John's preferred drink – neat, no ice or chaser.

After his three year stint at University College ended, he returned to England, ostensibly to re-join the unit at the London School of Hygiene and Tropical Medicine run by Ben Platt. However he decided to return to Jamaica. He wrote (1):

> There is so much still to do here, much more than I can do on my own. I shall put it to the MRC [Medical Research Council] that there should be a unit in Jamaica, working initially on malnutrition…I proposed the name Tropical Metabolism Research Unit.

The proposal was accepted in 1953. The TMRU's international renown and success in research in human nutrition and its continuing role as a centre of excellence attest to the vision, foresight and leadership of its founder.

In April 1959 John invited me to lunch in Atlantic City, where we were both attending scientific meetings. I was completing two years at the Children's Hospital of Philadelphia with no firm plans on what to do next. At lunch John offered me a one-year appointment at the TMRU starting as soon as possible. I quickly accepted. Little did I know that the initial one year contract would extend to 21 years with the MRC, until 1970, and then the University of the West Indies until 1980.

Lab work

In 1959 John suggested (he never instructed but rather suggested) that I work on the metabolism of albumin in the malnourished child. For this project I needed a 50 µl micro-pipette and a very sensitive Geiger counter to measure ^{35}S-methionine.

Neither item was available commercially at that time. John was not 'just a brainy scientist', but very much a hands-on laboratory scientist. He taught me how to make and calibrate micropipettes as well as how to make a very sensitive Geiger counter and specimen holder.

Sometimes his exploits in the laboratory were scary. For instance, he once decided he would synthesise [15] urea using phosgene, a decidedly dangerous procedure. We became aware of this activity when we saw him emerge from a small dark room wearing an old World War Two gas mask that had seen better days. Nevertheless, he was quite gifted in the laboratory. He developed and constructed a micro-respirometer based on the Cartesian diver apparatus that was 1,000 times as sensitive as the conventional Warburg apparatus, which enabled him to measure enzyme activity in a few milligrams of tissue. He also constructed a quartz fibre torsion micro-balance sensitive to about two micrograms to weigh liver biopsy specimens.

Fair dealing

I was the sole MRC staff member of West Indian origin at the Unit until 1961, when George (later Sir George) Alleyne, another UCWI graduate (class of 1957) from Barbados joined the Unit. Our appointment was apparently a first for the Medical Research Council, since at the other two MRC Units in the Gambia and Uganda there were no local MRC staff appointments.

However, our terms and conditions of service were not the same as for other MRC staff, who were all from the UK. I remained on contract throughout my stay at TMRU and was never given tenure, as would be the case with UK staff. John considered this treatment as a blatant injustice and although he took this matter up to the highest level, it was never put right. This is just one example of his strong sense of fair play. Another major difference with the MRC was that he had felt from the beginning that 'the Unit should contribute to the intellectual development of the region' (1). I believe that these differences contributed to his decision to return to the UK.

John encouraged us to think on our own and to develop our own ideas and areas of research. His criticism was always constructive, never destructive. He also wrote scientific papers with clarity, economy of prose and a relentless flow of logic. It was humbling to submit one's draft of a paper and see it transformed into an elegant presentation. He would decline to have his name on papers to which he made major contributions, giving his juniors all the credit. He engaged with his juniors, with impeccable politeness and genuine sincerity; never belittling nor bullying. He encouraged and facilitated his junior staff to present their work at regional and international conferences, but always after they had presented to the Unit where presentations were thoroughly critiqued. He afforded promising junior staff every opportunity to advance in their careers.

John had a passion for hiking, and spent many a holiday hiking in Italy and Greece. He combined scientific enquiry with hiking during the three expeditions he mounted to the Colombian Andes. In Jamaica he would get physically fit by climbing the nearby Blue Mountains. Other Unit members accompanied him, but I politely declined and was left in charge of the Unit.

On an Andes expeditions which examined the causes of altitude sickness, John and two others went on a low potassium diet and on reaching high altitude he became progressively sick, oedematous and finally comatose. He was quickly carried on a mule to base camp at 12,000 feet and given potassium tablets when he recovered (1). On return to TMRU Dr. Robert Montgomery, who was instructed to 'look after John Waterlow', was roundly chastised by Professor Eric Cruickshank.

Worldwide benefit

John recalls how the famous Jamaican Cicely Williams (of kwashiorkor fame) would visit the TMRU from time to time and ask: 'What is the point of all this fancy research? All these babies need is food and tender loving care'. However, it was this research done at TMRU that laid the foundations for the effective treatment of severe childhood malnutrition. Mike Golden summed it up (2):

> The studies in TMRU are bearing fruit in a very dramatic way in Africa. If the mortality rate had remained at about 30 per cent in those countries with national protocols and for those children treated by non-governmental organisations, then about one million more children would have died.
>
> The progress in understanding malnutrition and applying the lessons to practical solutions in the field has been remarkable. It would not have happened without TMRU and its successive generations of dedicated scientists.

By his seminal contributions to human nutrition, through the visionary establishment of the TMRU which produced distinguished alumnae and their scientific output, and through his influence on Caribbean governments and research culture, John Waterlow has left the Caribbean and the world an unparalleled legacy.

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Development. International Conference on Nutrition
The time for action is now!

Access November 2014 Urban Jonsson, Claudio Schuftan on ICN here
Access ICN official Declaration here
Access ICN official Framework for Action here
Access ICN unofficial Statement from civil society and social movements here
Access ICN unofficial Statement from social movements here
Access 2014-11-27 Inter Press Service Genevieve Lavoie-Mathieu on ICN here
Access December 2014 Update on ICN here



Delegates listen to the speeches at the International Conference on Nutrition. The formal function of the Member States present was formally to ratify official documents whose text was already complete

Claudio Schuftan writes:

I write in response to the *WN* coverage of ICN2, the second UN International Conference on Nutrition (links are above). Yes, I was there. I also write as from the People's Health Movement. We need to keep ICN2 and its potential significance in perspective. It was held at the UN Food and Agriculture Organization in Rome, 22 years after the first ICN in 1992. We must look back at the 22 years since ICN1 and be critical of what was achieved, primarily in terms of Member States keeping the solemn promises they made: There is little to show for it. Some achievements can be acknowledged, but these are mostly not actual ICN promises having been fulfilled.

Need to stand by the human right to food

Consider the following. Looking at nutrition as a basic human need characteristically brings with it promises. On the other hand, looking at it as an inalienable human right brings with it corresponding obligations for the state. We, as public health nutritionists, must keep on hammering that addressing the problems of malnutrition is a formal duty for governments that are signatories of UN human rights covenants. Despite organised and repeated explicit efforts in the last 12 or so months by over 180 public interest civil societies and social movements to influence the official ICN2

Political Declaration and Framework for Action (accessed above) the final documents that came to ICN2's plenary for quick ratification were not framed as obligations' to be fulfilled by UN Member States. In the final documents, the right to nutrition is still given more lip service than the indispensable robust commitment.

Need to plan long-term

Moreover, we still see little emphasis and commitment on member states addressing the social and political determination of malnutrition (both under and over). Actually, it is not all, but certain member states, which is to say those who were responsible for the 'bracketing' of the original text of ICN2's political declaration and who, in the name of consensus, finally toned down the binding language of the ICN2's political declaration and framework for action.

What would it entail, then, for the ICN2 political declaration and its framework of action to be human rights-based? It is quite clear. Member States should have been called upon to prepare long term plans, say of 15+ years, for the progressive realisation of the right to nutrition. The plans would apply the human rights-based planning process that identifies claim holders and duty bearers.

Governments of each country, together with their public interest civil society organisations and social movements, would then set annual benchmarks for say the two upcoming years, for processes to be put in place and completed by the anniversaries after the plan's launch, all pointing at the progressive realisation of this right. These annual points of reference would be monitored by the above public interest organisations and social movements, acting as watchdogs of the processes. The proposed requirement is only for two year plans at a time, because situations constantly change, and annual monitoring will bring new insights for what is needed for the next two years.

Need to distance the corporate sector

What then of the 'private sector', which features in the official ICN2 documents? Of course none of us in civil society is against business interests as such. Part of the problem here is one of concepts and terms. What we denounce and combat is not industry or business or 'the private sector', but the vast and usually transnational corporations (Big Ag, Big Food, Big Alcohol, Big Pharma) that are forcing their way into international policy negotiations including in UN agencies. This is the red line for public interest groups. We denounce UN agencies for coining the term 'non-state actors', which lumps together public interest civil society and the corporate sector as if they are 'collaborators' – no doubt having been pressed by powers that have gained leverage in the UN system through 'public-private partnerships' with not-so-hidden conflicts of interest. The corporate sector has no place in global policy- and decision-making. Their allegiance is to the money market and to their shareholders.



Representatives of public interest civil society organisations and social movements present at Rome had a different way. They met together openly and hammered out Declarations at the conference

Seeing things like this, as they really are, public interest organisations have as many reasons to be sceptical as to be optimistic about the millions of dollars that were poured into yet another mega UN conference. We all have been regretting slow or minimum progress since ICN1 22 years ago, whose speeches and formal documents were replete with enthusiasm, hyperbole, and hope.

Hopeful signs

This time though there is reason to be hopeful. There are real signs of new energy, solidarity and dynamism among the 180 (and growing) civil society and social movements. As the organising UN agencies of ICN2, the Food and Agriculture Organization and the World Health Organization did allow and enable our groups to gain active participation in the ICN2 process, including in its follow-up which starts now.

It is our right and also our duty to continue to insist on this engagement. We are ready and able to sustain our responsibilities. We will continue to insist that UN Member States and the UN as a whole with its agencies acknowledge and fulfil their obligations. And 'we' surely includes all public health professionals, and all engaged World Nutrition readers. We consider the time for action is now! As the public interest civil society and social movement Statement, accessible above, concludes:

> We hereby declare a worldwide People's Decade of Action on Nutrition.
> The time for action is now!

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Schuftan C. Development. International Conference on Nutrition. The time for action is now! [*Feedback*] *World Nutrition January-February 2015,* ***6,*** *1-2, 115-117*