

Nutriview 2000/3

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■ **Nutriview** is a quarterly newsletter on the role of micronutrients in nutrition and health. It is published by Roche Vitamins Europe Ltd, Basel, Switzerland, as a service to health-care professionals and science communicators. The findings, interpretations and conclusions expressed in **Nutriview** are those of the authors, and are not necessarily shared by the Publisher. Contributions and correspondence, as well as requests for additional copies, may be sent to Dr Max Blum at the address shown below. Unless otherwise stated, information in **Nutriview** may be reproduced without permission provided that proper credit is given.

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■ Feature:

Micronutrient interventions can reduce morbidity and mortality

There has been a massive increase in knowledge about the interactions between nutrition and infections in recent years. Increased awareness and better treatment of infections, including improved dietary management, have brought a striking reduction in child mortality.

It is now clear that malnutrition increases the risk of infection, independent of socioeconomic status, and that timely correction of micronutrient deficiencies could reduce the prevalence and severity of infections, and allow more mothers and young children to survive. The immediate challenge is to use our new knowledge to formulate effective policies within national and international health and development programs.

Barriers to implementation

Why don't governments and agencies who seek to reduce child mortality do more to eliminate malnutrition? Many contend that the only way to go is to implement economic development policies aimed at increasing food production and/or employment and wealth. They feel that the multiplicity of contributing factors makes the problem too complicated to address by any other means. Others emphasize the importance of "safety nets" and food baskets, anticipating that social welfare programs enable efficient targeting towards the most vulnerable groups.

While recognizing the enormous problems facing those who have to make the decisions, it is surprising that few of them have shown a sustained commitment to reducing morbidity and mortality through nutrition interventions. Some of the possible reasons for this are:

- Emphasis on prevention and treatment of severe acute infections by immunization and integrated management programs.
- Misconception that nutrition programs are too complicated, because they need repeated administration, while other health interventions can be provided on a single occasion.
- Reliance on antimicrobials and oral rehydration solutions.
- The growing impact of HIV and AIDS on morbidity and mortality, and the expectation that antivirals can reduce mother-to-child transmission of the disease.
- Concentration on programs to improve antenatal and obstetric care.

It is becoming widely accepted that economic policies and medical technologies alone are not sufficient to achieve the desired goals. In spite of highly sophisticated and often costly interventions the results have been quite disappointing. On the other hand, the arguments supporting inclusion of nutritional measures have never been so strong.

Value for money

Policy and program administrators face many competing demands for resources. Before introducing any new measures, they need a clear and convincing analysis of costs and benefits. Evidence from nutrition studies shows that micronutrient interventions are "good value for the money". However, most of the available evidence is based on supplementation with individual micronutrients rather than correction of multiple deficiencies.

After being confirmed in controlled clinical studies that regular administration of vitamin A capsules to infants and young children in vitamin A deficient areas reduces mortality by about 30%, vitamin A supplementation has become a regular part of many child survival programs. Vitamin A also has a major impact on symptoms associated with various infectious diseases. The effects have been most impressive in measles and malaria (Barclay et al., 1987; Hussey and Klein, 1990; Shankar et al., 1999). The impact of vitamin A on diarrhea and respiratory symptoms varies widely, and

seems to depend (at least in part) on the pathogens involved (Henning et al., 1992; Ghana Vast, 1993; Barreto et al., 1994; Bhandari et al., 1994). Interpretation of the findings is also complicated by the fact that children in the situations tested often have multiple infections and deficiencies.

Vitamin A can also reduce maternal mortality. Only half as many pregnancy related deaths occurred in women of reproductive age who took vitamin A or beta carotene supplements, than in the non-supplemented women (West et al., 1999). Preliminary data suggested that vitamin A prophylaxis might also influence mother-to-child transmission of HIV (Semba et al., 1994). New research done to test this hypothesis has, unfortunately, proved disappointing so far.

Both iron and zinc deficiencies impair immunity. Many, but not all, studies have shown a beneficial effect of zinc supplementation on diarrhea and respiratory symptoms (Roy et al., 1998; Sazawal et al., 1998; Lira et al., 1998). While iron supplements are regularly given to pregnant women, their use in children has so far not been advised, because of conflicting evidence suggesting possible negative effects. However, in recent studies in Africa, infants and older children who received iron supplements had less anemia without an increase in frequency or severity of malaria attacks (Fuller et al., 1988; Menendez et al., 1997; Bates et al., 1997). These findings suggest that iron supplementation may have an important strengthening effect on immunity.

Considerable progress has been made in eliminating iodine deficiency. Nevertheless, many millions are still affected. Besides devastating effects on cognitive function, iodine deficiency increases perinatal and infant morbidity and mortality.

At present, only few studies have measured the effect of multiple micronutrient interventions on morbidity and mortality. One of these evaluated the impact on pregnancy outcome in HIV-positive women (Fawzi et al., 1998). Multiple micronutrient supplementation was associated with significant

This article is based (with permission of the author) on a paper by Professor Andrew Tomkins, Centre for International Child Health, Institute of Child Health, London, UK that was published in the Proceedings of the Nutrition Society 2000; 59: 135-146.

For literature references, please see the original paper.

reductions in fetal deaths, stillbirths, premature deliveries, and small or underweight babies, as well as an improvement in maternal immune status, while vitamin A alone had no effect.

Nutrition interventions usually do not need health professionals to administer them. Informed, motivated, committed parents and community leaders can take the lead in giving nutritional supplements, promoting dietary improvements, and encouraging the use

of fortified foods (Bloem et al., 1995; Darnton-Hill, 1999). Programs can be started on a small scale, perhaps with NGO support, and later expanded to a national level (Bloem et al., 1996). There are many ways for professionals to help communities discover their potential for improving the lives of their children (English et al., 1997).

Facing the challenge

Substantial benefits can be achieved with

micronutrient interventions. We must not, however, expect that developing countries can solve all their health and survival problems simply by correcting micronutrient deficiencies. The issues are too complicated.

Researchers and practitioners must work together to develop the best combination of affordable, sustainable measures and make them available to the communities that need them. ■

■ Conference report:

Girls should prepare for motherhood early

On December 2, 1999, the Royal Society of Medicine and the Mother and Child Foundation hosted a one-day forum meeting in London to review the evidence supporting the concept that diseases of later life originate in the womb, and that the risks can be reduced by appropriate nutritional measures¹.

The aims of the conference were to delineate the nutritional biology of low birth weight, associated handicaps and chronic disorders in adults, and to define a way forward to prevent and treat such disorders, and improve cognitive development and health.

Eminent researchers from around the world presented their views on a wide range of topics addressing the roles of individual nutrients (such as vitamins and lipids), the importance of proper nutrition before and after conception, the impact of poverty, education and postnatal feeding on pregnancy outcomes and infant development, and the methods used to measure the health and development of children.

Good maternal nutrition is vital

Key messages communicated at the meeting were:

- The mother's nutritional status has an important impact on the health of her offspring.
- Girls should start eating a healthy diet in preparation for motherhood while they are still children themselves; if they wait until pregnancy occurs, it is too late.

- Following pregnancy, micronutrient supplementation may be needed to restore depleted reserves and ensure optimal levels in breast milk.
- Children and adults should be encouraged to eat "sensibly" and helped to understand the importance of a balanced diet for good health.

Nutrition imbalance increases risk

Professor David Barker, the originator of the "fetal origins of disease" hypothesis, discussed the possible mechanisms and the available evidence. The fetus apparently adapts to a nutrition imbalance in order to survive (example: blood flows preferentially to vital organs such as the brain while less important organs are undernourished). These adaptations can permanently change body structure, physiology and metabolism.

Much of the evidence collected over the past ten years shows a strong correlation between birth weight and occurrence of diseases such as diabetes, coronary heart disease and related conditions in later life. However, birth weight by itself seems to be an unreliable indicator. Disease risk is higher in people whose birth weight was at the lower end of the 'normal' range, and who showed accelerated postnatal growth. There appear to be major differences between



Now is the time to be ensuring that these girls grow up with a good nutritional status, so they can become healthy mothers and have healthy children.

males and females. High-risk males were very thin at birth, while high-risk females were very short. Both thin mothers and overweight mothers provide a suboptimal environment for fetal development. Efforts to improve the nutritional status of young girls in preparation for motherhood may therefore be a very worthwhile investment for the future. – A. Bowley ■

Reference

1. Maternal nutrition as the key to the health and ability of the child. Forum conference at the Royal Society of Medicine, London, UK, December 2, 1999.

Review:

Helping babies survive

The World Health Organization estimates that more than nine million babies are born dead or die in the first few weeks of life each year. Most of these deaths (40–70%) occur in developing countries. The main causes are infections, malnutrition and lack of health care. In May 1999, the USAID-supported Child Health Research Project and Maternal and Neonatal Health Program sponsored a meeting on perinatal and neonatal mortality to assess its magnitude and causes, identify appropriate interventions, and determine research priorities. A summary of the proceedings was published in October 1999¹. Some of the main findings follow.

Factors involved

Up to 70% of infants who die soon after birth weighed less than 2.5 kg at birth. Most cases of low birth weight (LBW) in the developing world are the result of intrauterine growth retardation (IUGR). Risk factors for IUGR include untreated urinary tract infections (bacterial vaginosis), ascending reproductive tract infections (including syphilis, gonorrhoea and chlamydia), low prepregnancy maternal weight and height, and maternal and fetal malnutrition. In areas with moderate to high malaria transmission rates, malaria may cause up to 30% of preventable LBW. Infants with LBW remain poorly nourished during childhood and grow up to become stunted adults who in turn give birth to small infants. This means that LBW can affect all future generations. Efforts to compensate for LBW are therefore essential throughout the life cycle. Premature birth and failure to exclusively breastfeed also contribute to the risk of early death.

Some reasons for the high incidence of infections as a cause of perinatal and neonatal death are failure to immunize adolescent girls and pregnant women, unsanitary conditions at delivery, and inadequate umbilical cord care. Other causes of perinatal and neonatal death include inability to recognize severe illness in a newborn, poor care-seeking behavior by the mother, and inadequate access to good quality medical care.

Underlying these direct and indirect causes in developing countries is widespread poverty, illiteracy and gender discrimination.

Preventive measures

Perinatal and neonatal mortality can be addressed by interventions in pregnancy, during labor and delivery, and in the first few weeks of an infant's life. Priority interventions prior to birth include:

- increasing the quality and scope of syphilis screening;
- improving the diagnosis and treatment of ascending reproductive tract infections;
- expanding maternal immunization with tetanus toxoid;
- including malaria prophylaxis in routine antenatal care;
- nutritional support for pregnant women.

During labor and delivery, the situation could be improved by:

- regular schooling of community health workers;
- economic incentives to improve identification and management of malpresentation and prolonged labor;
- referring complicated cases to health center or hospital;
- providing transport and child care to improve mothers' referral compliance.

After birth, the lives of many neonates could be saved by:

- wider use of resuscitation techniques for asphyxiated infants;
- proper management of neonatal sepsis and other infections;
- skin-to-skin Kangaroo Care* for preterm infants;
- immediate, exclusive breastfeeding.

*In the Kangaroo Care method, the infant is placed between the mother's breasts with skin-to-skin contact, instead of in an incubator. Effectiveness, safety, and improved survival (20–60%) of preterm babies cared for in this manner has been demonstrated in Zimbabwe and Mozambique. The bigger the baby, the better the survival. Potentially fatal apnea is also reduced.

Challenges

Priority should be given to research in the following fields:

- causes of low birth weight and premature birth;
- prevention and treatment of bacterial vaginosis and sexually transmitted diseases;
- improvement of maternal nutrition and micronutrient supply;
- control of intestinal parasites and malaria;
- control of neonatal infections at the community level;
- improvement of obstetric and neonatal care.

One of the greatest challenges facing the international public health community is to create sustainable interventions in those countries where the needs are greatest. Crucial to the success of programs is national ownership and public-private partnerships to ensure long-term funding. An ongoing dialogue must be established between governments and researchers to combat perinatal and neonatal mortality. Governments must be able to call upon researchers to help them solve health problems, and research results must be used to formulate national programs and policies.

The public health landscape is constantly shifting, presenting new problems to solve. New (AIDS) and old (tuberculosis) infectious diseases strain resources. To master these challenges we need innovative researchers, and well trained birth attendants and care givers. The discussions at this conference and follow-up meetings will be used to guide research, develop programs for implementation and formulate national health policies. – A. Bowley

Reference

1. Child Health Research Project Special Report, Vol. 3; No. 1, October 1999. Reducing Perinatal and Neonatal Mortality. Report of a Meeting in Baltimore, Maryland, May 10–12, 1999. The complete report can be downloaded as a PDF file from the Internet at: <http://www.childhealthresearch.org>

■ Review:

Ensuring adequate micronutrient levels in food aid

SUSTAIN (Sharing U.S. Technology to Aid in the Improvement of Nutrition), a nonprofit organization based in Washington, D.C. and dedicated to improving nutrition and food quality worldwide, recently published the final report on its Micronutrient Assessment Project (MAP)¹. This three-year scientific study on three continents was launched in 1996 with funding from the United States Agency for International Development (USAID) Bureau for Humanitarian Response, Office of Program, Planning and Evaluation with technical support from the Global Programs, Field Support and Research Bureau, Center for Population, Health and Nutrition, Office of Health and Nutrition. The main objective of the study was to determine the level of micronutrients in the fortified food commodities provided in the United States Public Law 480 food assistance program, which reaches mothers, children and refugees targeted by emergency and development feeding programs in developing countries.

The study investigated the uniformity and stability of key micronutrients (vitamin A, niacin and iron) added to processed cereal foods from manufacture to consumption. Vitamin A was selected for intensive study because of its significant health benefits, its relatively high cost when added as a fortificant, and the challenge posed by its labile nature. Elimination of vitamin A deficiency through food fortification has a high priority worldwide. Iron and niacin were studied not only because of their health benefits but also because of their potential use as 'indicators' in quality assurance tests for fortification processes.

They are relatively stable micronutrients.

In a parallel activity supported by a separate cooperative agreement, the SUSTAIN team investigated vitamin C. This, like vitamin A, is a labile fortificant and therefore subject to the same questions regarding cost-effectiveness and potential loss during shipping, storage and cooking.

Shortcomings uncovered

The study team uncovered serious manufacturing shortcomings in the fortification of some processed and blended cereals. Findings included inconsistent uniformity of micronutrients in the end product, low levels of fortificants within some production lots, and loss of highly labile micronutrients (such as vitamin A) during production. Problems affected large and small manufacturers alike. Possible explanations could be the use of low quality fortificants, faulty equipment or poor plant design.

Loss of vitamins and minerals in the dry commodities during shipping and storage was statistically significant, but not a serious overall problem. Cooking processes used routinely by recipients to make a simple gruel depleted vitamin A content to only 50% of post-shipment levels. Retention was better (70%) in foods with lower moisture content. These cooking losses were not altogether unexpected. Overall the amounts of vitamins A and C actually delivered to the recipients were well below expectations. In some extreme cases, only trace levels of these two vitamins were found in the cooked food.

These findings were confirmed in companion studies and reviews con-

ducted by the US Department of Agriculture (USDA) and the National Academy of Sciences.

Corrective measures initiated

Since completion of the MAP study, significant efforts have been made to improve the quality of fortified food commodities for food aid programs. USDA is working with USAID to establish standards for analytical 'indicators' that will be used to determine if commodities have been properly fortified. They propose to introduce regular testing and an enforcement program to ensure that manufacturers meet quality standards.

USDA is also considering adopting a total quality systems audit program that focuses on the manufacturing process and operating procedures. This is an alternative to end-of-production inspections and verifies if a supplier has the capability to manufacture products that consistently meet USDA standards, to deliver on time, and to respond to and resolve consumer complaints.

The report recommends that fortification of cereal-based foods with vitamin A continues, in spite of the shortcomings identified. As an additional means of supplying vitamin A to the target populations, the MAP team recommends vitamin A fortification of vegetable oil. This is now being done. – A. Bowley ■

Reference

1. Final report of the Micronutrient Assessment Project. Submitted to the United States Agency for International Development 1999. SUSTAIN, 1400 16th Street, N.W. Box 25, USA - Washington DC 20036. More details can be found at: <http://www.sustaintech.org/publications>

■ Editorial:

Prevention is better than cure

With so much malnutrition existing around the world, how could I dare think about such a subject for this issue's editorial? Maybe I am an optimist, and

thinking ahead about what to do after current efforts eliminate the problem in the near future. On the other hand, you might think I am a pessimist, who sees

the task in hand as being futile, and prefers an easier alternative!

There is, of course, another answer. I want to draw your attention to the

efforts being made to approach the problem from a wider angle. More and more researchers are pointing to the importance of maintaining an adequate balance of micronutrients for good health.

After achieving worldwide recognition that deficiencies of vitamin A, iron and iodine are not just a major health problem, but an impediment to economic growth and prosperity as well, it makes sense to draw attention to the other vitamins and minerals. Even if it has not yet been proven, it seems very likely that multiple micronutrient deficiencies are widespread, and may have a major impact on public health. If, as much evidence already suggests, resis-

tance to disease is limited by nutritional status, then by investing more in nutrition, nations could accelerate economic development as well as reducing suffering and medical costs.

A solution now being proposed by some researchers is to ensure optimal nutrition in young girls through to adulthood. The idea is that, in this way, they become healthy mothers and give birth to healthy children. The thought is intriguing, but it is not only a very long-term proposition, it scarcely fits in with existing traditions.

One way to improve micronutrient status that seems to be gaining increasing support is to provide multiple micronutrient supplements. The main problem

here would be how to ensure proper use by the target groups. Would people with low incomes agree to buy and take such 'medicines' for an unlimited period?

We can, of course, hope that social marketing and other educational measures will eventually lead people to eat balanced diets. The simplest way to improve micronutrient status, however, is to fortify staple foods. The cost of multiple fortification is only negligibly higher than addition of a single nutrient. The technology is available, and fortified foods are acceptable to consumers. Perhaps preventing malnutrition does not have to be just a dream!

– A. Bowley

■ News in brief:

New INACG Steering Committee

The International Nutritional Anemia Consultative Group (INACG) has constituted a new steering committee to oversee world dissemination of current information about iron deficiency, its health consequences, and successful strategies to reduce the health and economic burdens caused by this nutritional problem.

Chairing the new committee is Dr Lena Davidsson (Swiss Federal Institute of Technology, Zurich). Other members are Dr Suniti Acharya (WHO South East Regional Office), Dr John Beard (Pennsylvania State University), Dr Frances Davidson (US Agency for International Development, USAID), Dr Eva Hertrampf (Universidad de Chile), Dr Marian Jacobs (University of Cape Town), Dr Sean Lynch (Hampton Veterans Affairs Medical Center) and Dr Rebecca Stoltzfus (Johns Hopkins University).

At their first meeting, on May 25, 2000, the new committee identified priority activities for the coming year. The goal is to develop momentum to address iron deficiency as a public health priority around the world by providing strong scientific leadership. To improve the chances of success, the group is seeking effective partnerships with other organizations focussing on this and related problems. Next year's INACG meeting will be held

in Hanoi, Vietnam, immediately after the IVACG meeting (see page 8). It will provide a convenient opportunity to catch up on the latest developments relating to both iron and vitamin A.

INACG was established by USAID in the 1970s to guide international activities aimed at reducing nutritional anemia in the world. Over the past 25 years, INACG has sponsored scientific reviews of issues related to etiology, treatment and prevention of nutritional anemia. These reviews have resulted in a series of documents useful in guiding programs.

The ILSI Human Nutrition Institute serves as the secretariat for INACG. The ILSI web site (<http://www.ils.org>) provides additional information on INACG activities and recent publications. ■

Other deficiencies influence anemia response to iron

Iron supplementation often fails to correct anemia. Reasons for this might be that the supplement was taken irregularly or for too short a time. Allen et al.¹ studied whether other micronutrient deficiencies influence the response to iron supplementation.

They gave 219 anemic Mexican toddlers a daily supplement (containing 20 mg iron or 20 mg zinc or iron+zinc) or a placebo syrup under supervision for twelve months. At the start of the study,

many children had vitamin deficiencies (A: 29%, E: 70%, B12: 10%) as well as low hemoglobin (70%), low hematocrit (60%) and ferritin deficiency (48%). After twelve months, none of the children who took iron had iron deficiency, but anemia persisted in almost a third. Anemia prevalence was similar in those who did not take iron. Children with higher initial vitamin B₁₂ levels were more likely to respond to iron with an increase in hemoglobin levels.

The lack of hemoglobin response to iron supplementation seems to have been caused by general undernutrition, and possibly by vitamin B₁₂ deficiency in particular. In this case it might be advisable to include other micronutrients in the iron supplements provided. This would add little to the cost of supplement delivery. ■

1. Allen LH, Rosado JL, Casterline JE et al. Lack of hemoglobin response to iron supplementation in anemic Mexican preschoolers with multiple micronutrient deficiencies. *Am J Clin Nutr* 2000; 71: 1485–1494.

Supplements for women – what, when, how?

Multiple micronutrient deficiencies and associated health problems are widespread among women in developing countries. The main cause is poor

dietary quality with low intakes of animal products, fruits and fresh vegetables. Economic restraints and limited availability of appropriate foods make it unlikely that micronutrient intakes can be improved by dietary diversification.

Huffman et al.¹ recommend that supplementation with multiple vitamins and minerals should be considered as part of any corrective strategy. Such an approach would be more economical, easier to implement and more effective than several individual supplements. Negative effects of nutrient interactions can be minimized by appropriate product formulation and good manufacturing practices.

A supplement should be chosen that contains appropriate forms and adequate amounts of key micronutrients to correct deficiencies with a minimal risk for pregnant women and their infants. It should be carefully manufactured and packed to avoid contamination and accidental overdosage (especially by children), and to ensure a long shelf life. It should also be affordable by the target group.

Other issues to be addressed are how to ensure that the supplements are efficiently distributed to, and regularly consumed by, all micronutrient-deficient women of reproductive age. ■

1. Huffman SL, Baker J, Shumann J, Zehner ER. The case for promoting multiple vitamin and mineral supplements for women of reproductive age in developing countries. *Food Nutr Bull* 1999; 20: 379–394.

Food fortification is best way to optimize folate status

To prevent the occurrence of neural tube defects (NTDs) nutrition authorities recommend that women should optimize their folate status before becoming pregnant. To achieve this, they can either increase their intakes of folate-rich or fortified foods, or take a supplement. McNulty et al.¹ have evaluated these recommendations by reviewing the results of intervention studies that examined the response of red-blood-cell folate (considered the best index) to each of these measures.

It has proved almost impossible to reach the main target group (less than half of all pregnancies are planned and NTDs develop in the first month before conception is confirmed). Interventions must therefore be aimed at all women of reproductive age.

Folic acid supplements are highly effective. However, supplementation is not a particularly reliable strategy for the general population, because of poor

compliance. Foods naturally rich in folates are inefficient sources of folic acid, because such natural folates are unstable and poorly absorbed into the body. To increase their daily intake of folic acid by 400 µg by eating such foods, most women would have to make major changes in their diets, which is unlikely to happen.

The vitamin added to fortified foods is folic acid, which is better absorbed than natural folates, and maintains its activity better during storage, preparation and cooking. It is therefore much easier for women to optimize their folate status by consuming fortified foods.

Mandatory fortification of staple foods with folic acid offers the best strategy for the primary prevention of NTDs. It might also provide other benefits, such as in the prevention of vascular disease. Current evidence suggests that a fortification program providing an additional 200 µg folic acid daily would be highly effective. ■

1. McNulty H, Cuskelly GJ, Ward M. Response of red blood cell folate to intervention: implications for folate recommendations for the prevention of neural tube defects. *Am J Clin Nutr* 2000; 71: 1308S–1311S.

Obituary

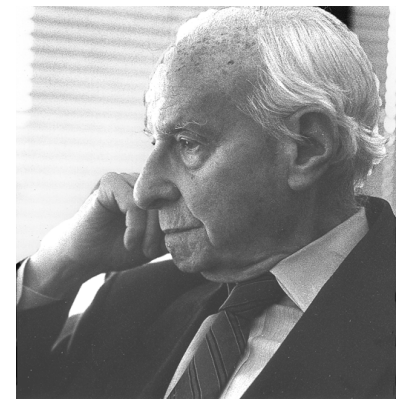
With great sadness we must inform you that Dr Abraham Horwitz died on July 10, 2000. He was 89 years of age. He will be buried in Chile, his native country. The Pan American Health Organization (PAHO) held a memorial service in his honor on July 14, which we attended.

Dr Horwitz was the father of IVACG, having served as the IVACG Chairman since 1988. His skillful diplomacy, breadth of experience, and wise counsel were beneficial to the organization on many occasions. He drew attention to the big picture, guided us to find a silver lining behind the dark clouds, and galvanized us into action. Impressed with his clear thinking and eloquence, colleagues made a special effort not to miss the closing remarks provided by Dr Horwitz at IVACG meetings. His leadership strengthened IVACG and much of the progress made in controlling vitamin A deficiency came to fruition during his leadership.

Beyond his work on behalf of IVACG, Dr Horwitz was well known for his seventeen-year service as Director of PAHO and for admirably guiding public health activities throughout Latin America and the Caribbean. For many years he was also president of the PAHO-affiliated Pan American Health and Education Foundation.

Many colleagues will recall the years Dr Horwitz generously served as the Chairman of the Subcommittee on Nutrition of the United Nations Administrative Committee on Coordination. He played a key role in fostering greater harmonization of policies and activities in nutrition for the UN system and he encouraged the participation of bilateral donor agencies.

Dr Horwitz was a kind and gentle human being. He set an example for how one should endeavor to lead one's life: always concerned for the well-being of those less fortunate than himself. The world has benefited from his presence among us. He will be greatly missed by those who knew him and had the privilege of working with him, especially his IVACG family.
– Alfred Sommer, Francis Davidson (Photo by A. Waak, courtesy of PAHO)



■ Events:

First Asian Conference of Pediatric Nutrition, Chiang Mai, Thailand, November 28–December 1, 2000.

Theme: "Collaborative Asia for the Advancement of Pediatric Nutrition". The program will cover up-to-date information on impact of nutrition on intelligence and health, a basic context for human development. It will also address advanced knowledge on enteral and parenteral nutrition, and new dimensions of micronutrient nutrition.

Information: Dr Pipop Jirapinyo, Department of Pediatrics, Faculty of Medicine, Siriraj Hospital, Bangkoknoi, Bangkok 10700, Thailand. Tel: (662) 419-7825/9946; Fax: (662) 884-1634; email: pipopj@asiaaccess.net.th ■

20th IVACG Meeting, Hanoi, Vietnam, February 11–15, 2001.

Theme: "Twenty-five years of progress: Looking to the Future". While commemorating IVACG's founding in 1975, participants will have the opportunity to share expertise from many countries.

The agenda includes invited presentations and up-to-date guidance on identifying vitamin A deficiency, implementing appropriate interventions, and monitoring and evaluating progress in deficiency control and prevention.

Information: IVACG Secretariat, ILSI Research Foundation, 1126 Sixteenth Street, N. W. USA – Washington DC 20036-3617. Tel: +1202 659-9024; Fax: +1202 659-3617; email: hni@ilsi.org ■

Second INACG Symposium, Hanoi, Vietnam, February 16, 2001.

Theme: "Why iron is important and what to do about it: A new perspective". This meeting of the International Nutritional Anemia Consultative Group (INACG) immediately follows the IVACG meeting, and will provide an opportunity to share expertise on the promotion of programs and research dedicated to reducing iron deficiency anemia in the world.

Information: INACG Secretariat, ILSI Research Foundation, 1126 Sixteenth Street, N. W. USA – Washington DC 20036-3617. Tel: +1202 659-9024; Fax: +1202 659-3617; email: hni@ilsi.org ■

6th International Conference on Health Promotion, Atlanta, Georgia, USA, May 7–9, 2001.

Theme: "Forging Effective Strategies to Combat Iron Deficiency". This meeting is sponsored by Project IDEA of the ILSI Center For Health Promotion, the Centers for Disease Control and Prevention (CDC), Emory University, and the Micronutrient Initiative (MI). Participants will examine technical, operational and policy issues relating to intervention strategies for iron deficiency, and will seek to define practical steps that countries can use to implement and monitor effective prevention and control programs. Emphasis will be placed on the role and practical implementation of iron fortification, and the value of integrating multiple strategies to combat iron deficiency for all groups.

Information: Ms Mai-Anh Hoang, Program Manager, Project IDEA, ILSI Center for Health Promotion, 2295 Parklake Drive, Suite 450, USA - Atlanta, Georgia 30345. Tel: 770-934-1010; Fax: 770-934-7126; email: mhaoang@ilsi.org Website: <http://www.ilsi.org> ■

Bioavailability 2001, Interlaken, Switzerland, May 30 – June 1, 2001.

This meeting will discuss results of recent scientific research related to bio-availability of micronutrients in relation to public health. Three half-day plenary sessions on minerals and trace elements, minor plant constituents, and vitamins and provitamins will be followed by workshops and poster sessions.

Information: Bioavailability 2001; c/o Laboratory for Human Nutrition, Institute of Food Science, Swiss Federal Institute of Technology (ETH), PO Box 474, CH-8803 Rueschlikon. Fax: +411-704 5710 (Attn. Mrs K. Santagata). Website: <http://www.ilw.agrl.ethz.ch/hu/bio2001.main.html> ■

17th International Congress of Nutrition, Vienna, Austria, August 27–31, 2001.

Continuing the tradition of earlier International Congresses on Nutrition, the goal of this meeting is to provide an update on issues in nutrition and food

sciences and to establish how new knowledge impacts on:

- goals for nutrition education;
- nutrition policy and programs;
- food security and safety;
- implementing recommendations for nutrition practices that will optimize global health through the prevention and treatment of disease.

The program includes plenary lectures and theme-specific symposia, as well as debate sessions on controversies in nutrition. A focus symposium will deliver in-depth information on a 'hot' topic: nutritional problems in Africa.

Secretariat: Vienna Academy of Postgraduate Medical Education and Research, Alser Strasse 4, A-1090 Vienna. Tel: +43 1 405 13 83 14; Fax: +43 1 405 13 83 23; email: medacad@via.at Website: <http://www.univie.ac.at/iuns2001/index.html> ■

International Symposium on Functional Foods: Scientific and Global Perspectives, Paris, France, October 17–19, 2001.

The program will cover a wide range of subjects related to functional foods with the following objectives:

- To review current world view on the scientific basis of functional foods and to identify areas of agreement and disagreement;
- To identify unifying concepts and illustrate with relevant examples;
- To review current scientific support for biomarkers to link functional food consumption to quality of life and/or health;
- To review the communication requirements from a scientific, consumer and regulatory point of view;
- To identify new trends in functional food science.

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