Children of the Nyangatom nomads in the South Omo tip of Ethiopia are receiving SIGHT AND LIFE vitamin A capsules. See article on page 3.

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SIGHT AND LIFE was founded in 1986 by F. Hoffmann-La Roche Ltd to help in the fight against vitamin A deficiency in developing countries. SIGHT AND LIFE is a humanitarian non-commercial initiative (see also page 36).

Opinions, compilations and figures contained in the signed articles do not necessarily represent the point of view of SIGHT AND LIFE.
Editorial

Turning knowledge into practice

At the Institute of Ophthalmology London after the exams of the courses in community eye health there is a traditional farewell ceremony before the students are leaving for their home countries. This year I was invited as a guest speaker. Among the students there were also two who had received support from SIGHT AND LIFE.

I could express that support of education is a priority for SIGHT AND LIFE which is also documented by the educational materials we issue, such as the manual and the slides on VADD. We donate educational materials and we contribute to international courses, on which we often report in the Newsletter. The Newsletter itself is also considered a contribution to increasing knowledge and to exchanging experiences – all this obviously focused on vitamin A.

In my address I touched on the various problems arising from gaining knowledge and putting it into practice. I used the example of vitamin A but in most other fields the mechanisms may be the same.

Vitamin A was the first vitamin to be discovered, but knowledge about it is still incomplete today, and the public health problems associated with its deficiency are far from being solved. The function of vitamin A in vision and the clinical symptoms of vitamin A deficiency were rapidly established but other results that were inconsistent or beyond this view were ignored or not taken seriously. When intervention studies showed a reduction of pre-school child mortality by 33%, the results were mostly discredited. One researcher even commented that, if a reduction of 10% were claimed, it would be credible. The relevance of data, the comparability of conditions etc. were questioned and all kinds of specious excuses were used to avoid practical application.

There were also many hurdles to be taken, before it was well established that vitamin A has a strong influence on the fatality rate in measles.

Today at least, it seems that many efforts to fight VAD are moving into the right direction; there are programmes in over 60 countries and many NGOs invest a lot of effort in this. Most recently presented results revealed furthermore that other population groups than just young children may be affected by VAD too. These new findings also demonstrate that knowledge of vitamin A and its importance for human health is far from complete.

I took the opportunity to emphasise the importance of thorough knowledge and the importance of a critical spirit and an open mind. Together with scientific knowledge, knowledge of facts as well as their limitations is included.

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Eye care program at the Omo Kibish Clinic, South Omo tip of Ethiopia

Deborah Sirjoosing, Medical Coordinator, Swedish Philadelphia Church Mission, Addis Ababa, Ethiopia

The Nyangatom people are nomads living in semi-arid to arid areas with daytime temperatures of 35° to 40°C which fall to 25°C or so at night. They are 22,000 in population. They are typical “survivors”. Scarcity of food, water and everything else increases their risk of early mortality. Their diet consists of sorghum during the 2 or 3 months of rainfall. Goat, sheep and cow milk are occasionally included when grass is available. Once in a while they eat of their livestock; they eat every part of the animal and drink the blood. However, the above dietary foods are not available 365 days a year.

Considering the dietary factors, vitamin A is certainly lacking. In July 1993 we faced a disastrous measles epidemic. Adults and children were affected. Many children died, others suffered from complications such as pulmonary TB and others yet became partially or fully blind. It was during this time that we evaluated the vitamin A needs among the Nyangatom people. Eye care is a tremendous challenge in South Omo.

1 The people sleep on the bare ground in most instances.

2 Very often water sources are far (2–10 km) from villages.
3 The tribal belief is that water is not good when eyes are infected or wound. Hence, in the case of conjunctivitis or trachoma, the severity increases due to this belief.

4 Some still use local leaves, roots etc. as treatment – all of which act very adversely.

Therefore, since January 1994, with the help of CBM, we have been carrying out routine eye care in the community and state health facility. Because of the routine supply of vitamin A from SIGHT AND LIFE, we have been able to carry out twice yearly vitamin A and TEO 1% distribution to all cases that are screened. We have also an integrated EPI and vitamin A eye care program. However, health education and community awareness take priority. The people’s “mind set” has to be changed, especially regarding water and face washing.

And so, four years later, I am happy to say that there have been remarkable improvements in awareness about eye care and vitamin A.

I have been in Omo for six years. As the medical coordinator, I would like to express my thanks to all who make it possible that the South Omo nomadic people are receiving the help they desperately need.
Current vitamin A campaign in Chuuk, Micronesia

Lois Englberger, UNICEF Health and Nutrition Advisor, Department of Health, Education, and Social Affairs, Kolonia, Pohnpei, Federated States of Micronesia

A program to improve the health of children was started in 1993 in Chuuk, in the Federated States of Micronesia (FSM). Chuuk is the largest of the 4 states of FSM and consists of seven major island groups. The other states are Pohnpei, Yap, and Kosrae, all belonging to the Caroline Islands archipelago. The population of Chuuk is about 53,000, the one of FSM around 105,000.

The ongoing program (VADAV) has mainly the aim to combat vitamin A deficiency and helminth infestation with the anti-helminth Vermox. Children from 1 to 12 years of age receive vitamin A supplementation twice yearly, the third week of March and the third week of September. The program is carried out by the Public Health Division, Chuuk Department of Health, with assistance of the FSM National Health Services, support by the United Nations Children's Fund (UNICEF) in program design, monitoring, and provision of vitamin A capsules, and assistance by a US federal grant in provision of the anti-helminth Vermox.
Unfortunately, prior to the onset of the program the prevalence rate of vitamin A deficiency (VAD) in Chuuk was among the highest in the world. Research carried out in Chuuk in 1992 showed that 96% of the Chuuk children had moderate to severe VAD, as shown by blood tests for serum retinol, with 79% having serum retinol levels low enough to put them at greater risk for severe disease or death. In 1989, 17% of Chuuk children were found to have clinical ocular signs of VAD, which defines a severe public health problem.

The problem is due to insufficient intake of vitamin A-rich food. In recent years, the diet has increasingly changed from a diet of locally grown root crops and staples, such as breadfruit and plantain, and is now unfortunately very much based on imported foods such as rice and flour-based food products. Many vitamin A-rich foods are however available. Advice is being given to eat the local papaya, mango, pandanus, pumpkin, green leafy vegetables, like kang kong, bele, chaya and spinach, as well as breadfruit, sweet potato, yellow banana, and the animal sources of vitamin A, e.g. milk, egg and liver.

In Chuuk over 23,000 children are involved in the program. A careful census and list of children’s names by locality is kept, and an awareness program is carried out to alert parents to take preschool- and schoolchildren to dispensaries and schools on distribution days. All areas of Chuuk are being reached, including the main island Weno, the lagoon and outer islands.

Non-pregnant lactating mothers are also given vitamin A, in order to enrich the breast milk for their infants. Mothers are now also given a high dose of vitamin A after delivery for the same purpose.

In October 1997, an evaluation of the program was carried out by UNICEF consultant Dr Guy Hawley. The report shows that, out of 162 children in schools and preschools, only 5 children or 3% were found to have clinical signs of VAD, compared to previous much higher rates. Yearly coverage from 1994 to 1996 was good,
Yap children performing traditional dancing at the International Women’s Day 9 on April 1998 in Pohnpei.

ranging from 71 to 95%. Dr Anna Marie Akapito, pediatrician at Chuuk Hospital, revealed that hospital pediatric admissions dropped from 126 to 10 per month and out-patient attendance from 109 to 30 per month for conditions related to VAD. A 1994 measles epidemic involving 815 cases resulted in 13 deaths of children, but health authorities believe that many more children would have died without the VADAV program. These figures show the success of the program. A few islands of the Chuuk lagoon and three areas on the main island of Weno still have some problems, which are now being concentrated on.

Dr Hawley pointed out that the VADAV team and VADAV coordinator Ms. Andita Meyshine should be congratulated for their achievement of high coverage from 1994 to 1996, and for their success in reducing the levels of clinical VAD.

Vitamin A supplementation, however, is only the short-term solution to the problem. Efforts in Chuuk are made to continue with nutrition education and horticultural interventions in order to increase consumption of vitamin A-rich foods. They include projects initiated by the Family Food Production and Nutrition (FFPN) program, Department of Agriculture, College of Micronesia Land Grant, and the Chuuk Interagency Nutrition Council. Health and nutrition education has been established in the curriculum for 17 primary schools using the TCP (Teacher, Child, Parent) approach and community extension projects like the family farming club led by the farmer and teacher Makoto Siren in Udot Island. Adults and children are encouraged to grow vitamin A-rich fruits and vegetables like papaya, bele, chaya and kang kong, and to eat them every day, in addition to local breadfruit, which is abundant according to season.

The irony of the situation is that the problem of vitamin A deficiency in Chuuk could be entirely avoided if the locally available foods rich in this vitamin, such as papaya and dark green leaves as well as breadfruit, would be eaten in sufficient quantities. The problem is now also known to exist in Pohnpei, for which a similar ongoing program will be initiated in September 1998.
Two recent studies in Morocco were dedicated to the problem of vitamin A deficiency (VAD), one regarding women and one concerning preschool children.

**Study of women in Kenitra and Eljadida**

In 1996 Ibn Tofail University studied the situation in Kenitra and Chouhaib Eddoukali University in Eljadida. Kenitra and Eljadida are coastal provinces living basically from agriculture with about 70% of women being illiterate and without income.

The studies aiming to assess the prevalence of nutritional disorders were both carried out in collaboration with the Ministry of Health and funded by the International Development and Research Centre in Canada (IDRC).

The vitamin A status of about 1000 women of reproductive age (15–49 years) was investigated. This sample was considered to be representative for the area as well as the province.

Plasma retinol levels were determined by HPLC (1), and risk factors which might have influenced the vitamin A status were measured as well.

The results of this survey show that 10% of these women have serum retinol levels of less than 200 μg/l, which indicates the presence of subclinical vitamin A deficiency (VAD). The distribution of the values is shown in figure 1. The corresponding value for rural areas is 12% and for young unmarried women (<20 years) 18%. However, it is of interest to note that women with a higher educational level did not show any deficiency.

The intake of vitamin A was evaluated by a modified Helen Keller Food Frequency method (HKI-M). Low serum retinol levels were associated with significantly lower vitamin A intake. The major food sources of vitamin A are vegetables especially in rural areas (2).
Study in preschool children

A seminar has been organised by the Ministry of Health on 22–23 June, 1998 (3) where the results of the study were presented. This VAD study among preschool children (6–72 months of age) was carried out in 1997 by the Ministry of Health in collaboration with Ibn Tofail University and funded by USAID. The objective was to investigate three geographically different areas such as mountains, plains, and coastal regions.

The results show that 40.6% of the investigated 1400 children had serum retinol levels of less than 200 μg/l, 3.1% of which having serum retinol levels of less than 100 μg/l (figure 2). This means that, according to the WHO cut-off, there is a severe public health problem of VAD in these regions, which requires immediate action.

VAD is most prevalent in mountain areas (47.1%) as well as in rural areas (45.5%). The educational and socioeconomic situation influences this prevalence. The children living in poor conditions show even higher rates of deficiency (54%).

According to the food frequency evaluation (HKI-M), the deficient children also consumed fewer vitamin A-rich products.

At the seminar it was recommended to supplement children with vitamin A during a vaccination campaign. At the same time efforts should be made to improve the children’s food. It should particularly be thought about the kind of foods which can be fortified with micronutrients, mainly iron and vitamin A. Equally, public awareness of the importance of vitamin A, in particular concerning mothers, should be increased.

Acknowledgement

We would like to thank IDRC and USAID for their financial support and the Ministry of Health for their excellent work and for their good collaboration. Many thanks also to Dr Nina Schlossman for her expertise.

References


Activities on vitamin A deficiency disorders in Cameroon

Martin Nankap, Nutrition Engineer-Dietician, Messa-Yaounde, Cameroon

Within the framework of the National Programme Against Micronutrient Malnutrition launched by the Ministry of Public Health and with the financial support of UNICEF the first 2-day workshop was held in Obala in late February 1998. Its aim was to sensitize health personnel from central and provincial regions to the problem of vitamin A deficiency disorders (VADD) and to instruct them in the prevention and treatment. In total, 12 people were trained on:

- Vitamin A, morbidity and mortality.
- Functions of vitamin A
- Epidemiology of VADD in Cameroon
- Physiopathology of VADD
- Strategies to prevent VADD
- Monitoring/evaluation of vitamin A supplementation

Two strategies have been adopted: Nutrition education and vitamin A supplementation.

At the end of the workshop two major recommendations were made. First, it was strongly recommended that a nationwide survey on VADD should be carried out, since there are only two studies available so far, one from the far-north province (VITAL study) and the other from a county in the centre province (OCEAC study). Both these studies show that VADD are of public health significance not only in the arid area but also in the forestry zone. The second recommendation was to train nationwide health care providers on the prevention and treatment of VADD.

For the near future it is planned to train about 80 health care providers from district level in the three northern provinces of Cameroon. As these provinces are in the subarid and arid areas they are considered to be at high risk of VADD. Also, millions of capsules of 100,000 IU and 200,000 IU, provided by UNICEF, will be distributed in the ten provinces.

Participants at the Obala seminar.

Vegetable garden (Hibiscus sabarittta) and a mango orchard (background) in the far-north province.
Sanya Primary School, Nigeria: A nutritional blindness prevention project

Dr Uzodinma A. Adirieje, Optonet International, Lagos, Nigeria

Introduction and background

Sanya primary school, Ijeshatedo, is a public primary school in Lagos State. The state has a high prevalence of vitamin A deficiency disorders (VADD) as already reported in the SIGHT AND LIFE Newsletter 1/1997, and Optonet is intervening with community programs as much as possible. The school’s pupils are mainly children from poor families in and around Ijeshatedo. It was urgently necessary to take some actions.

Objectives

1. To identify pupils already suffering from VADD.
2. To educate the teachers/staff of the school about vitamin A deficiency, its nature/identification, causes, prevention and management.
3. To prevent and treat clinical VAD by distributing vitamin A capsules.
4. To provide information for further actions based on the results of the project.

Methodology

At the end of February 1998 the Optonet team visited the school and identified all children aged 10 years and younger who complained of night blindness and poor distant vision. Teachers and staff were taught about the problems of vitamin A deficiency, its identification, treatment with vitamin A capsules and prevention using dietary measures and available pre-formed vitamin A. They were encouraged to include nutritional blindness education in their curriculum.

Later on the staff of the school and the Optonet team jointly gave vitamin A (200,000 IU capsules from SIGHT AND LIFE) to all children aged 10 years and younger. The following day all those children earlier identified as suffering from night blindness received another vitamin A capsule. This procedure, together with an examination for the presence/ab-
sence of night blindness, was repeated three weeks later.

Results

In the school 256 children aged 10 years and younger were examined. Of these, 54 children (21%) complained of night blindness.

At the examination three weeks after the two initial vitamin A dosages, 45 children (83.3%) reported recovery from night blindness.

Conclusion

This project can be considered as very successful. The high rate of night blindness (21%) shows that there is a severe vitamin A problem. The recovery rate of 83% after administration of two vitamin A capsules is remarkable. It is recommended to run such projects in many other needy schools/villages. This is necessary in order to eliminate VADD and its accompanying morbidity and mortality.

Nutritional blindness prevention efforts should be included in all child health programs in Lagos State.

Control of vitamin A deficiency in the Kwale District Eye Centre, Kenya

H. E. Roberts MD, Medical Director, Mombasa, Kenya

We received the vitamin A capsules from SIGHT AND LIFE in good condition.

This past year we identified fifteen children who attended the clinic with a definitive diagnosis of vitamin A deficiency. Sadly some of these were irreversibly blind but we were able to treat the rest of their families and prevent them from going blind too.

Xerophthalmia identifies families who are in trouble in that they need to learn the basics of a balanced diet. We always follow up these children and visit their homes. Once we have found one family with a vitamin A-deficient child we usually find that neighbouring families are also at risk.

Our community-based program is going very well. We have just completed a further training course for new motivators in which they are taught how to recognise those at risk of vitamin A deficiency. These people are out working in the fields amongst the community and will see people who are unaware of the Centre.

If there is any doubt at all we give vitamin A and are able to do so readily and for free because of the SIGHT AND LIFE donation.
Continuing efforts in Shebe, Ethiopia

Sr Sirpa Korhonen, Clinical Activities Coordinator, Shebe Primary Health Care Project of Finnish Mission

The work in the Shebe Primary Health Care Project in Southwest Ethiopia continued in 1997. Primary health care activities included 9 peasant associations, with the assistance of 138 volunteer Community Health Promoters. They were supervised and supported by the 7 members of the project staff. Over 1000 health education lessons were given, which were attended by about 40,000 people.

The School Health Programme was conducted in 17 schools, with health education lessons and practical hygiene demonstration to about 35,000 attendants.

Three schools and 33 households were involved in the agricultural support program to establish kitchen gardens. The main plants are carrots and green leafy vegetables.

The MICAH (Micronutrient and Health) program, funded by World Vision, Canada, has started its activities in October 1997. Six peasant associations were selected with about 4500 households and a total population of nearly 17,000. The health team has started health education which mainly focuses on hygiene issues and prevention and treatment of vitamin A, iodine and iron deficiency disorders. Agricultural advise is being given to farmers, later focusing on the preparation of land for green leafy vegetables and poultry farming.

In addition, the program is initiated in 8 schools, mainly involving health education, clinical activities, formation of nutrition clubs and establishment of vegetable gardens. Also, clean water supply systems will be established by protecting springs and digging wells.

In the Mother-and-Child (MCH) Health Clinic of the Shebe Health Center during 1997 over 4000 children aged 5 years and younger were screened and about 1900 pregnant mothers examined. Totally 1500 vitamin A capsules were distributed in the MCH clinic.

After a six-month break the eye clinic was opened when a recently trained ophthalmic nurse started working. In the future we hope to report more about prevention and treatment of xerophthalmia and other eye disorders.

In the garden of the Shebe Health Centre a group of mothers is learning about carrot cultivation.
Community eye health in Pakistan

Ellen Schwartz, MD, International Centre for Eye Health, London, UK

Pakistan is one of the developing countries with extremely fast population growth and inadequate health services for the majority of the population. The recent political developments in Southeast Asia do not raise hopes for any improvement of the situation.

However, Pakistan is among the few countries worldwide where alternative approaches have been implemented to create sustainable eye care services and to reduce preventable blindness in the whole country.

The Pakistani Institute for Community Ophthalmology (PICO) has been established in the town of Peshawar in the northwestern Frontier Province. The Institute is offering community-orientated eye health, training for eye care personnel and research in causes of blindness and epidemiology of eye disease.

PICO has started a one-year Master course in 1998 which is aimed at ophthalmologists and general practitioners. Principles of community eye health, epidemiology and planning of eye care programs are taught.

SIGHT AND LIFE and Christoffel Blindenmission have been financing three lecturers from the International Centre for Eye Health in London to teach on the course this year.

In two weeks the principles of planning of eye care programs were discussed along the lines of major blinding diseases in Pakistan. These are first and foremost cataract and glaucoma, but in certain areas of the country trachoma and vitamin A deficiency are still a problem. Vitamin A deficiency still seems to be prevalent in certain areas, mainly poor and remote areas and among refugee communities. There are at present no published data on the prevalence of vitamin A deficiency, nor programs to control it.

Both trachoma and vitamin A deficiency are conditions occurring in pockets throughout the country which are not easily recognised. These communities need to be identified and targeted with long-term interventions aimed at changing the living conditions of the people.

With enthusiasm students from different provinces of Pakistan discussed possibilities of detecting communities at risk and possibilities for the control of vitamin A deficiency and trachoma. In dissertations to be submitted later on this year, some students will present control programmes for their province or region.

In the future, the Master course at the Pakistan Institute is going to be held annually and will be open for ophthalmologists from Pakistan as well as from neighbouring countries. We hope that by training eye care personnel in community-oriented planning and service implementation, sustainable eye health care will be provided for the majority of the people.
Evaluation of vitamin A status in children of the Banke District, Mid Western Nepal

A.R. Boulter, Swiss Red Cross, Nepalgunj, Nepal

Background

In 1997 a survey of the trachoma situation in two districts of the Bheri-zone was conducted using a protocol which has been developed in collaboration with WHO. This was a population-based survey of the overall trachoma situation in Bardia and Banke districts.

Later on, it was decided to conduct a study which focused on the most vulnerable groups. These have previously been identified as the Tharu and Madeshi communities. A Tharu community resident in Birrendranagar, Surkhet District and a Madeshi community located in the East of Banke District were selected for the study. Children up to 11 years of age were investigated.

Despite the fact that the study was targeted on trachoma control, it was decided, for opportunistic reasons, to include the signs and symptoms of vitamin A deficiency as an additional component. Both selected areas are already included in the national program to improve vitamin A nutrition and prevent vitamin A deficiency, including the administration of vitamin A capsules.

Results

There were no indications of vitamin A deficiency symptoms in the 765 Tharu children examined. Therefore the detailed results are not presented here.

In contrast, Bitot’s spots were found among the Madeshi children. The detailed results are as follows:

Narainapur and Kalaphanta are the two evaluated Village Development Communities (VDC) of the Banke District. Prior to the examinations three wards from each VDC were mapped and enumerated. The total number of children under 11 years of age was 639, 585 (91.5%) of which were examined for Bitot’s spots.

Vitamin A deficiency is considered to be a serious problem in this community and the necessary actions will be taken.

<table>
<thead>
<tr>
<th>Ward No</th>
<th>Total households</th>
<th>Children examined</th>
<th>Bitot’s spots</th>
<th>% Prevalence</th>
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</thead>
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<tr>
<td>Narainapur VDC</td>
<td></td>
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<tr>
<td>2</td>
<td>69</td>
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<td>68</td>
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<td>105</td>
<td>223</td>
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Age group distribution of Bitot’s spots

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<thead>
<tr>
<th>Age</th>
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<th>Male cases</th>
<th>Female cases</th>
<th>Total cases</th>
<th>%</th>
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<td>1</td>
<td>3</td>
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<td>14</td>
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<td>Total</td>
<td>585</td>
<td>25</td>
<td>14</td>
<td>39</td>
<td>6.7</td>
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</table>
Surveys in Kabul, Afghanistan, indicate major prevalence of vitamin A deficiency

Lydia Huber and Kurt Mahler, Christoffel Blindenmission, currently on staff with the National Organization for Ophthalmic Rehabilitation (NOOR)*

In winter 1997 students from NOOR’s program for training ophthalmic technicians distributed SIGHT AND LIFE-supplied high-potency vitamin A capsules in the process of a survey.

The students screened 943 boys aged seven years and older at two major primary education centers in Kabul over a two-month period in late 1997. An ophthalmic nurse supervised the survey. The two centers are widely separated from each other; one is primarily a relocation site for war refugees; the other hosts a relatively stable, indigenous population. Both areas enjoy access to spinach and carrots throughout the year.

The trainees looked for two clinical signs of vitamin A deficiency, night blindness and Bitot’s spots, using a 20x magnifying lens. Those in need received vitamin A capsules as recommended by the World Health Organization. It is interesting to note that no xerophthalmic scarring (XS) was found.

In addition, surveyors used the WHO grading scheme for evaluating trachoma cases and dispensed either one or two tubes of tetracycline ointment for trachoma TF/TI.

Several factors hindered the completion of a more comprehensive survey. In the midst of surveying the older children, the schools closed without an-
nouncement due to the onset of winter. The younger children were often fearful and gave unclear answers to questions of the surveyors and, in addition, the ophthalmic technician trainees had no prior survey experience.

Another major factor was that the trainees surveyed only boys. Kabul’s current government forbids the public education of women of all ages. For this reason, trainees were not able to survey the group of those most at risk, namely the children at home with their mothers.

Despite these limitations*, the survey of primary-school children in Kabul revealed that a major percentage of them exhibit signs of vitamin A deficiency.

Other survey data on vitamin A deficiency is relatively scarce and insufficient for comparative analysis. The current political climate also hinders data-gathering efforts, since city authorities generally forbid men to visit the homes of non-relatives for health survey purposes.

Nonetheless, NOOR staff are currently conducting a comparative survey between mother-and-child health clinics which distribute vitamin A and clinics which do not. Feeding centers are surveyed as well. In addition, ophthalmic technician trainees are screening about 500 children at the city orphanage for vitamin A deficiency symptoms.

In the near future, NOOR will begin to teach groups of midwives and indigenous clinical staff about vitamin A deficiency. NOOR will recommend a one-time, high-potency dosage to mothers at the time of giving birth.

NOOR is currently forming an advisory board to supervise a country-wide program for vitamin A deficiency prevention through community education and the distribution of high-potency capsules.

The evidence of a major vitamin A deficiency problem in Afghanistan challenges NOOR to expand its operations in this war-torn region. It is a challenge to NOOR’s resources as well. Thus we greatly appreciate any kind of support of our effort to provide this nation with eye care.

Vitamin A deficiency in boys of Kabul

<table>
<thead>
<tr>
<th>Total boys examined</th>
<th>943</th>
<th>794</th>
<th>149</th>
</tr>
</thead>
<tbody>
<tr>
<td>age 7 to 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>age &gt;10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

With xerophthalmia: 10.6%

Suspected XN/ malnutrition: 0.8%

Boys aged 7 to 10:

- X1B cases: 5.28%
- X1A cases: 0.60%
- XN cases: 5.54%

Total cases: 11.5%

Boys aged >10:

- X1B cases: 2%
- X1A cases: 0%
- XN cases: 4%

Total cases: 6%

Ophthalmic technician trainees screening schoolboys for vitamin A deficiency and distributing vitamin A capsules.

*: In the meantime the situation is even more difficult and most of the work is interrupted (editor).
A ceremony against vitamin A deficiency in Beishifu Town, Lai Yuan County, China

Wang En-Lin MD, Epidemic Preventive Station, 32 Beitangjia Lane, Baoding City, China

On 11 June 1998 a ceremony of mass campaign on the fight against vitamin A deficiency was held in Beishifu Town, Lai Yuan County, China.

Lai Yuan County is situated in the north-west of China, about four hundred kilometres apart from Baoding City. The Taihang Mountain, the Hengshan Mountain and the Yarishan Mountain meet here. It is also the origin of the Juma River, the Yishui River and the Laishui River with numerous peaks and flowing springs. It has a population of 250,000 and a total area of 2448 square kilometres. There are 17 townships and 286 villages under the jurisdiction of the County Government. Most of Lai Yuan County is in the remote mountains. The average elevation is about 1000 meters. Because there is a short frost-free period of 120 to 150 days, the villagers can yield only one crop a year. The main crops are: maize, millet, corn, bean, buckwheat and sweet potatoes. There is a shortage of vegetables, especially vitamin A-rich vegetables. The villagers have little access to milk and very little to fruits or meat. Every family has a vat of fermented and preserved vegetables for the winter and the spring. People work mainly in agriculture, without secondary occupations. The living conditions are comparatively low and it is one of the counties in China that need help. Here, both vitamin A deficiency and iodine deficiency are public health problems.

More than 1000 participants, including leading representatives of the Government as well as parents and children, attended
the meeting. The meeting-place was selected in the countryside in order to have more mothers and more children from vitamin A-deficient areas take part. A banner with the slogan “Deliver vitamin A capsules free of charge, contribute our love to the children in mountain areas” decorated the front of the meeting-place.

The leaders of Government of the County and the City were seated in the front row on the rostrum. On the right of the rostrum, there were 100,000 vitamin A capsules and a batch of leaflets on the table with a poster saying “Vitamin A capsules donated by the Task Force SIGHT AND LIFE”. Hundreds of children were seated and hundreds of mothers stood. Information leaflets were distributed to everybody present. The meeting was presided by Dr Wang Yiu-Qin, Vice-Director of the Health Bureau of Lai Yuan County. Mr Ding Bao-Zhong, Vice-Director of the Health Bureau of Baoding City, gave the main speech. He said: “Vitamin A deficiency is an important health problem in many developing regions of the world. In Lai Yuan County, 33.6% of children aged 6–36 months have a level of serum vitamin A below 20 µg/dl and 8.1% of the children have a level even below 10 µg/dl. This indicates that vitamin A deficiency is a public health problem in Lai Yuan County which should cause serious nutritional concerns. Virtual elimination of vitamin A deficiency by the year 2000 was declared as a global objective at the World Summit for Children (1992). Scientific evidence accumulated in the last decade has led to the consensus that improving the vitamin A status of young children in regions of VAD would reduce mortality rates by an average of 23%. Up to now, national policies supporting regular vitamin A supplements of children have been adopted in 61 to 78 countries where VAD is considered a public health problem. However, this is the first time that vitamin A capsules are delivered to children in VAD areas in our County, in our City, in our Province, in China”. He continued: “Delivery of vitamin A supplement in Lai Yuan
County has received close attention of leaders at different levels and enjoyed the support of the people too. We all should do our best to improve the vitamin A status of young children in the mountain area in order to protect them from micronutrient deficiencies which can impair both physical and intellectual development in the children in our region.”

Then Mr Sun He-San, Director of the Health Bureau of Lai Yuan County, and Ms Sun Yan-Ping, Vice-Head of the Beishifu Town Government, also gave important speeches. Finally, Ms Sun Su-Hua, Vice-Magistrate of the Government of Lai Yuan County, gave a summary. She said that improving the vitamin A status of deficient children could substan-

tially reduce childhood morbidity and mortality. Emphasis should be on reaching those hard to reach; and special attention should be paid to those most in need of vitamin A supplementation who might not be reached due to their living in remote communities or to a variety of reasons parents could not take the children to the services offered. She expressed her thanks to the leaders of Government and Party as well as Organisations coming from Baoding City for their concern and for taking good care of the children in the mountain areas of Lai Yuan County.

At the end of the meeting, leaders at different levels of the Government or the Health Bureau, including Ms Sun Su-Hua, Mr Sun He-San and Mr Ding Bao-Zhong gave children vitamin A capsules.

There are 23,000 children aged 6–72 months in Lai Yuan County. The first round of the county-wide vitamin A supplementation was scheduled for June 1998, after the nutritional research on children in surveillance points had been completed.
Vitamin A deficiency – prevention and control in Coimbatore District

Rajammal P. Devadas, Chancellor, Avinashilingam Institute for Home Science and Higher Education for Women – Deemed University, Coimbatore 641043, Tamil Nadu, India

Vitamin A deficiency is one of the major public health problems in India, the prevalence rates being 1–5% among the children in different parts of the country. Several short-term and long-term measures have been tried to prevent and control vitamin A deficiency in Coimbatore District of Tamil Nadu State in India, applying several intervention strategies either alone or in combination.

A Red Palm Oil (RPO) study was carried out in Coimbatore among 2454 preschool children participating in a feeding program. All the children regularly received a supplementary food prepared with RPO (4 g/child/day) for a period of one year. One gram of RPO supplies 400 μg of β-carotene. A control group of 2628 preschool children received the same food but prepared with palmolein. By the end of one year, the clinical signs of vitamin A deficiency had completely disappeared among the RPO-treated children. Through another investigation, it was found that the mere participation by the children in the school meal program, which supplied around 25 g of leafy and other vegetables per day, helped the children to improve their vitamin A nutritional status, measured in terms of the clinical picture.

Towards testing the feasibility of implementing combined strategies, a study was planned in which two groups of children in 25 preschools were each selected and treated as follows for a period of two years: Children in group A were supplemented with 30 g amaranthus per day, those in group B received 30 g amaranthus per day and nutrition education. Vitamin A gardens were raised in those preschools.

Clinical picture and serum retinol levels were used as criteria for evaluation of this study. Table I presents the changes in the prevalence of vitamin A deficiency among children.

As the duration of participation increased, the clinical signs disappeared among the children. By one and a half years, all the children were completely free from clinical signs of vitamin A deficiency, irrespective of the treatment given. Table II indicates the changes in serum retinol levels of children.
The children in both groups recorded increments in serum retinol level. When a combination of methods was used, significantly greater increments were recorded than when a single method of intervention was applied.

In 15 centres vitamin A gardens could be raised covering an area of 2112 sq. ft. Over a period of six months 21.9 kg greens and 42.5 kg vegetables and fruits were harvested from the gardens. The benefits derived from preschool vitamin A gardens were as follows:

1. Harvested produce was utilised for meal preparation in the preschools.

2. Awareness was created among preschool workers and children of the importance of vitamin A in their daily diet.

3. Through the school gardens, mothers were motivated to raise kitchen gardens in their houses.

Conclusion

Consumption of RPO could be promoted in developing countries where vitamin A deficiency is prevailing as a nutritional problem. Inclusion of vitamin A-rich foods in the school meals will result in encouraging outcome. Fighting against vitamin A deficiency through combined strategies was highly beneficial. Based on the experience gained, it could be concluded that raising vitamin A gardens at home, at schools and at community level and imparting nutrition education to children and mothers will lead to lasting impact on the vitamin A nutritional status.

Table I. Number of children showing clinical signs of vitamin A deficiency* at different intervals

<table>
<thead>
<tr>
<th>Groups</th>
<th>Initial cx</th>
<th>Initial Bs</th>
<th>6 months cx</th>
<th>6 months Bs</th>
<th>12 months cx</th>
<th>12 months Bs</th>
<th>18 months cx</th>
<th>18 months Bs</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>71 (2295)</td>
<td>40 (2295)</td>
<td>28 (875)</td>
<td>14 (596)</td>
<td>5 (875)</td>
<td>0 (596)</td>
<td>2 (875)</td>
<td>0 (596)</td>
</tr>
<tr>
<td>B</td>
<td>78 (2340)</td>
<td>49 (2340)</td>
<td>25 (886)</td>
<td>10 (663)</td>
<td>2 (886)</td>
<td>0 (663)</td>
<td>2 (886)</td>
<td>0 (663)</td>
</tr>
</tbody>
</table>

*cx=conjunctival xerosis, Bs=Bitot’s spot. Numbers in parenthesis indicate the total number of children participating in the study.

Table II. Serum retinol levels of target children

<table>
<thead>
<tr>
<th>Group</th>
<th>No. of children</th>
<th>Serum retinol ±SD (µg/100 ml)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Initial</td>
<td>Final</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>40</td>
<td>17.44 ±2.46</td>
<td>12.45 ±4.07</td>
</tr>
<tr>
<td>B</td>
<td>30</td>
<td>18.58 ±1.38</td>
<td>14.54 ±4.20</td>
</tr>
</tbody>
</table>

* Group difference significant at five per cent level, t-test, t=2.09.
A long way to Santarém

A letter by
Janette F. Ryan, Director of Health, Departamento de Saúde e Paz, Missao Projeto Amazonas (PAZ), Santarém Pará, Brazil

The long delay in responding to the shipment of vitamin A sent to us here in Brazil is due to the long time it took for the capsules to arrive. Your letter is dated July 1997 and it was received well before the bottles with the vitamin A arrived in April 1998. It took a very long time for the parcel to arrive in Belém, the capital of our state. Then there was a further delay in getting all the items through customs. We finally did receive the two vitamin A bottles with the rest of the materials from Christoffel Blindenmission (CBM) here in Santarém.

We also just received via the mail service another two bottles with vitamin A capsules from SIGHT AND LIFE with an accompanying letter dated March 1998. This way of shipment is obviously much quicker.

We do have an eye program funded by CBM, in which we have primarily performed cataract and IOL (Intraocular Lens) surgery as well as minor surgeries. We live and work in an immense area, with thousands of small communities and villages that are drastically underserved in health care on every level. Because of the very remote and primitive conditions in which thousands of people live, eye sight is critical to continue to function normally and independently. Many live in small jungle and river villages with rough and even dangerous living conditions, often without electricity or the possibility to adapt to physical deficiency of any kind. Therefore without sight, they become very dependent on others to care for their day-to-day needs and mobility.

Many of those we see and treat are malnourished because of a poor diet in most of these remote inland and river communities. Many work very hard manually to eke out a living on land that was probably cleared off by burning the jungle off, to be able to plant. After producing much food during the first one to two years, the soil is mostly depleted of essential growth elements, and further harvests are modest. Rice and cassava (manioc or mantioc) are the primary crop planted in any kind of quantity in this region. The vast majority of the population eat farinha (toasted granules of the cassava or manioc root, often irritating to the stomach), rice and fish and, if possible, beans as well. Few eat much fruit or legumes and vegetables, so they have minimal vitamin and mineral intake. We would like to expand and undertake more preventive action wherever possible.

The Eye Program Coordinator, a Brazilian nurse, will be the primary person responsible for the distribution of the vitamin A capsules. We have several health boats with volunteer workers who travel from community to community to help the poor and those most in need. So we will train the volunteer workers in the health boats to distribute the vitamin A. Also, during health clinics with professional clinicians who help us 3–4 times per year, vitamin A will be distributed.

Health boat in Santarém base.
The volunteer health workers are also trained in gardening of legumes and vegetables rich in vitamins and minerals. They then teach others in their communities and explain why, how, and which things to plant, with ongoing health teaching being a large part of their responsibilities. In most communities gardening is not established now, or people grow primarily plants such as onions which have only little nutritional value, and maybe couve (in the kale family). Other items may be planted also in larger quantities. But people rather take them to town to sell and do not use them to feed their own families. Then they buy non-nutritional items with the money they earn.

Although development may be slow, our goal and hope is that ongoing teaching and demonstration will begin to make a difference in these thousands of small communities all over the Amazon Basin. Eight bases work towards developing and implementing Primary Health Care with the assistance of the Mission’s Headquarter in Santarém. We are working to have a trained volunteer in each main community to help and teach about healthier living and about prevention of illness.

IVACG launches e-mail discussion concerning vitamin A deficiency

The International Vitamin A Consultative Group (IVACG) is launching an e-mail discussion list concerning vitamin A deficiency. The goal of this listserv is to promote networking and sharing of information and expertise related to vitamin A deficiency.

A "listserve" allows one to send an e-mail through a central address to a group of participating subscribers who receive the message simultaneously within minutes. Any subscriber who wishes to reply can send a message through the central address (thus reaching the entire group of subscribers) or send a private message directly to the original sender.

The IVACG Secretariat staff is optimistic about this excellent opportunity to expand the liaison dimension of IVACG’s work. The listserv allows more continuous, informal sharing of timely information and expands the potential for continuing education beyond IVACG’s international meetings and series of published technical references.

While there is no fee for participating in this list, it is a “closed” list, i.e. the IVACG Secretariat monitors subscriptions to the list. For general information about IVACG events and publications, the IVACG World Wide Web
On 16 and 17 May about 70 ophthalmologists mainly from Switzerland, other European countries and from overseas met in Basel (Switzerland) for a symposium on ophthalmology in developing countries. The symposium was organised by the Schweizerische Ophthalmologische Gesellschaft (SOG) and CBM. This get-together was also an occasion to celebrate the 90th anniversary of CBM. Basel was chosen for this event because it was there that the founder of CBM, the pastor Ernst Christoffel, had studied before he opened, in 1908, the first home for the blind in the orient. Over the past 90 years CBM has grown to the world-wide largest NGO in the field of blindness prevention, training and rehabilitation of blind people in developing countries. Today CBM supports more than 1000 projects in 105 countries. 1997 over eight million eye patients were examined, treated and when necessary operated. The headquarters of CBM International is based in Zurich, Switzerland.

The world-wide activities of CBM was presented by Mr M. Schellenbaum, National Director of CBM Switzerland. Dr A. Tilen, president of SOG, gave an overview of the world-wide blindness, informed on the Global Initiative 2020 to eliminate preventable blindness and on the efforts being made to support developing countries.

Other main topics were:
- Cataract, overview of world-wide blindness, Prof. V. Klauss (Munich University, FRG);
- Vitamin A deficiency, blindness in childhood. Dr M. Frigg (SIGHT AND LIFE, Basel);
- Trachoma control, Prof. G. Schumann (Graz University, A);
- Onchocerciasis, Dr D. Etya’ala (WHO, Geneva);
- Work at the Eye Hospital Lahan, Nepal, Dr A. Hennig (CBM, Nepal);
- Project experiences in trachoma control, Dr E. Sutter (Basel)

The symposium revealed a broad spectrum of activities aimed to support developing countries. It was an excellent opportunity to hear about all the goodwill for further collaboration and help as well as a suitable platform to exchange specific knowledge and experiences among experts.

Altogether this is giving new perspectives to millions of poor people with impaired sight or any kind of eye problem.
Symposium on vitamin A and carotenoids in the Netherlands, 23 and 24 April 1998

Clive West, Wageningen Agricultural University, The Netherlands

Following the three successful “Vitamin A research in the Netherlands” symposia in 1989, 1992 and 1995 (West & Schrijver, 1989, 1992), the fourth symposium broadened to include carotenoids was organised again by Wageningen Agricultural University and TNO Nutrition and Food Research, Zeist. As with the previous symposia, the venue was Roche Nederland’s headquarters in Mijdrecht just outside Amsterdam. The purpose of this series of symposia is to bring together Dutch scientists working on vitamin A and carotenoids from various perspectives and using different approaches ranging from fundamental to applied.

The opening address was given by Robert Russell from the USDA Human Nutrition Research Center for the Aging at Tufts University in Boston who gave an overview of the physiological and clinical significance of carotenoids. This topic was revisited in the forum discussion. This paper was complemented by that given by Willie Stahl from the University of Düsseldorf on the role of carotenoids on cell communication.

There was a strong emphasis on carotene bioavailability during the symposium as there are three groups in the Netherlands working actively on this subject. Henk van den Berg (TNO Nutrition and Food Research) presented his groups results on the effect of lutein on β-carotene absorption.
and cleavage; Karin van het Hof (Unilever Research Vlaardingen) discussed the potential of vegetable processing on increasing carotene supply to humans (heat and mechanical treatment which can not only increase bioavailability of carotenes but also result in their isomerisation or destruction); and Jacqueline Castenmiller and Clive West (Wageningen Agricultural University) reviewed the quantitative data available on the SLAMENGI factors for carotene bioavailability and bioconversion. Sandra Bausch-Goldbohm (TNO Nutrition and Food Research) then reviewed the contribution of various foods to retinol and carotenoid intake in man based on recently collected data in the Netherlands on food intake and the carotenoid composition of foods. 

The flags of Wageningen Agricultural University, Roche and TNO Nutrition and Food Research, Zeist, in front of the Roche building in Mijdrecht, where also the group picture (below) of the meeting participants was taken.
To highlight the Dutch interest in developing countries, Jeannine Hautvast (St Radboud University Hospital, Nijmegen) presented data showing that serum retinol concentrations were negatively associated with malaria parasitaemia in Zambian children in the first two years of life. Another paper on work in developing countries was not presented at the meeting but will appear in the proceedings. This was by Saskia de Pee (Helen Keller International, Jakarta) with data on the impact of a social marketing campaign promoting dark-green leafy vegetable and egg consumption in Central Java.

There was then a series of papers on the role of retinoids and carotenoids at the molecular level. Aalt Bast (University of Maastricht) reviewed information on the antioxidant activity of carotenoids and concluded that very little information is available on the biological activity of compounds formed from carotenoids when they act as antioxidants. Tony Durston (Hubrecht Laboratory, Utrecht) then brought participants up to date on the molecular biology of retinoic acid receptors. This was followed by papers by Johan Lugtenburg (Leiden University) on the structure and function of retinoproteins and carotenoproteins at the molecular level and by Wim de Grip (University of Nijmegen) on molecular aspects of the visual process which were both based on the use of quite sophisticated physical-chemical techniques. Bram Brouwer (Wageningen Agricultural University) and Paul van der Saag (Hubrecht Laboratory, Utrecht) presented twin papers on metabolic approaches to studying retinoid-modulating compounds.

The last paper was presented by Ulf Wiegand (Roche, Basel), who reviewed work on the safety aspects of carotenoids, a topic which has received some attention since the negative results of the high doses of β-carotene in the Finnish ATBC study and the American CARET trial.

The symposium concluded with a forum discussion under the chairmanship of Frans Kok (Wageningen Agricultural University) on whether the non-provitamin A activity of carotenoids is important for human health. Clive West argued that evidence based not only on possible mechanisms established from studies on model systems and observational studies but also from intervention studies is not yet available while Robert Russell suggested that there was good circumstantial evidence that carotenoids had a protective effect, independent of their provitamin A activity, on a number of diseases including macular degeneration and prostate cancer.

All in all the symposium was regarded as a success although it may have lacked some of the fire of the previous symposia. With the assistance of the sponsors, including not only Roche Nederland but also the Dutch Margarine and Vegetable Oil Manufacturer Association, The Dairy Foundation on Nutrition and Health, Unilever Research Vlaardingen, Quest International Nederland, and BASF, the proceedings of the symposium will be published in the International Journal of Vitamin and Nutrition Research.

The organising committee comprising Clive West, Henk van den Berg, Angela Severs (also from TNO Food and Nutrition Research), Johan Lugtenburg and Jaap Schrijver (NUMICO) are now contemplating the next symposium planned for 2001.
The path to maternal and child health

Highlights of a meeting on the role of PVOs in improving iron and vitamin A status*

Dr Gretchen Berggren, Moderator, Lecturer (retired) Harvard School Public Health

Introduction

On 5–7 May more than 200 participants from 80 organisations and 20 countries representing a number of US-based private voluntary organisations (PVO), industry and the scientific community, gathered in Washington DC to address the needs in nutrition programming to combat micronutrient deficiencies in the developing world, particularly iron and vitamin A. The concern rose in part from changing recommendations, lack of consensus, and a need for more consistent protocols especially for vitamin A and iron-folate supplements.

It was the overall goal to contribute to the improvement of maternal and child health in developing countries. The conference aimed to work towards consensus in programming and technical recommendations and to increase impact through expanding knowledge, to improve and promote cooperation between the different players and to improve the access to effective micronutrient supplements for PVOs.

The needs

Malnutrition is increasingly recognised as an underlying cause of death in children under the age of five. Nearly half of those deaths from preventable causes are due either directly or indirectly to undernutrition. Women are affected as well, with anemia recognised as a contributing factor in nearly one fourth of post-partum maternal deaths. UNICEF also highlights the needs to address “the silent emergency” due to deficiencies of iron, iodine, vitamin A and zinc.

It was not the intent of the conference to ignore the many million children affected by protein-calorie malnutrition, nor to ignore other nutritional problems. Many PVOs are already committed to the improvement of overall nutrition. Rather, the need was to better understand the determinants and consequences of micronutrient deficiencies and their remedies as part of a wholistic approach to caring for mothers and children.

Underlying causes

Micronutrient deficiencies include inadequate food in the household, insufficient health services and an unhealthful environment as well as inadequate care of women and children. Household food security is defined as sustainable access to food as distinct from its availability. In many countries food may be available while many people and children under five in particular have no access to it.

Overall strategy

International organisations, including WHO, UNICEF, IVACG, INACG, are recommending four main strategies:
- nutrition education
- dietary diversification
- dietary supplementation
- food fortification

Although each of these was discussed, more emphasis was placed on supplementation. Of the four, food fortification was considered most.

* Due to the focus of SIGHT AND LIFE the report emphasises mostly on aspects related to vitamin A, however, this is not meant to distract from the importance of an overall healthy nutrition including all micronutrients (editor).
Vitamin A deficiency

The presentation of the extent of the problem was based on published as well as most recent research results. For more details see e.g. the SIGHT AND LIFE Manual on VADD.

It is obvious that recent results emphasised to view the health of the mother and that of the child in a more interlinked way. If the mother herself is deficient, breastmilk may be inadequate and the health risk for the baby is increased. Dr K. West noted that prevention of vitamin A deficiency in children not only prevents xerophthalmia but also reduces the severity of infections, reduces child mortality (23–45%), reduces malaria attack rates as well as hospital admissions (38%, Ghana). Since vitamin A reduces the severity of infections, especially diarrhea and pneumonia, vitamin A supplements contribute to a decrease in protein-calorie malnutrition which often follows severe infections. In fact, the effect of vitamin A in reducing measles mortality is so great that the American Academy of Pediatrics now recommends 200,000 IU of vitamin A to be given immediately.

Diagnosis of vitamin A deficiency can be based on the established parameters depending on the availability of laboratory facilities. Nutrition surveys of different levels of sophistication may provide valuable information within short time and at reasonable costs. A not yet fully utilised technique is the dark adaptometry. This easy, cheap and non-invasive method takes advantage of the fact that in very early stages of vitamin A deficiency, the ability of the pupil to constrict under illumination is impaired. By flashing a hand-held light at one pupil and covering the other, the degree of impairment of the pupillary reflex can be estimated.

Night blindness as reported by mothers is a good indicator, especially in cultures where it has a special name such as “chicken eyes” in Nepal. If it exists, there are usually sub-optimal stores. This condition is associated with three- to six-fold higher mortality rates.

Pregnancy and vitamin A deficiency

Women in developing countries are often deficient, for example 50% of women in south Asia have serum retinol values below 30 μg/dl. About 10% suffer from night blindness during pregnancy. The deficiency is associated with anaemia, increased morbidity and apparently also increased mortality long after the pregnancy. A recent study in Nepal shows a 40% reduction in pregnancy-related mor-
tality by a weekly vitamin A supplement.

Existing treatment and prevention schedules were not generally discussed. However, it was felt that the available tools in the form of low-dose supplements were by far not sufficient. Some contacts with industry were established and there is certainly a goodwill to try to supply the supplements needed for specific projects.

**Zinc deficiency**

Low birth weight, preterm delivery, prolonged obstetric complications and impaired fetal development have been associated with zinc deficiency. There is a growing body of evidence that women with low zinc levels (<60 μg/dl), when supplemented, have a better pregnancy outcome. Supplements of 20mg zinc/day given to pregnant women improved birth weight and reduced pregnancy complications.

**Food fortification**

This method is considered most cost-effective. Again, in order to be successful the collaboration of different partners, including legislation, is necessary. In a status paper on food fortification Max Blum has recently dealt with the subject.

At the conference it was felt that there is still a big potential to solve problems through food fortification. In the past this approach was considered only as a sole solution while today most people have realised that there is no single solution.

**The visions**

It was recommended that PVOs refine the assessments and find out who is at risk in a population they serve in order to take specific actions.

Research on micronutrient needs should continue and data should be collected and evaluated for practical application.

Partnerships should be developed including industry.

Training in technical aspects should be increased and the relevant knowledge should be shared with all interested parties.

Social marketing techniques should further be explored and tested.

The attention should be increased to programs that can foster nutrient diversity in the diet of women and children.

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**The prevention of childhood blindness**

The vast majority of blind children live in developing countries. Malnutrition, particularly vitamin A deficiency, and infections, such as measles, are by far the most frequent causes of blindness. Other causes include conjunctivitis of the newborn, congenital cataract and retinopathy of prematurity. Most of this blindness can be prevented or cured.

This slide/handbook set provides a practical tool for teaching health workers how to recognise, treat and/or refer children with eye disease. It also sets out the measures necessary for prevention of these diseases, such as immunisation, health education, improved nutrition and sanitation.

The slides provide statistics on childhood blindness, photographs of eye disease and recommendations for treatment. The handbook provides information to support each slide.

This handbook can also be used for individual study but slide projection is recommended particularly for learning how to recognise eye disease.

Further information from:
International Resource Centre
Internat. Centre for Eye Health
Institute of Ophthalmology
11–43 Bath Street
London EC1V 9EL, UK
Fax +44 171 608 6923
E.mail eyeresource@ucl.ac.uk

An estimated 1.5 million children are blind worldwide, and there are half a million new cases each year. Many of these children die within months of becoming blind.
During the last year several people mentioned to SIGHT AND LIFE to have seen the stamp issued by the Swiss Post to honour Paul Karrer. The stamp also shows a vitamin A formula. So SIGHT AND LIFE asked an expert in carotenoid and vitamin A chemistry to shortly present who this person on the stamp was and what his merits were. We thank Dr Bernhard for his summary. (Editor)

Paul Karrer

Kurt Bernhard, PhD, Research Chemist, Roche, Basel

Paul Karrer was born in Moscow to Swiss parents on 21 April 1889. The family moved back to Switzerland in 1892. In 1908, after his education at the Gymnasium (highschool) of Aarau, he started to study chemistry at the University of Zürich. Under the supervision of Prof. Alfred Werner, Karrer did his Ph.D. degree in the field of cobaltates and worked as an assistant with organoarsenic compounds. This brought him in contact with Prof. Paul Ehrlich (Frankfurt am Main, Germany), who is considered the founder of modern chemotherapy. In 1912 Karrer left Zürich for 5½ years to work at Ehrlich’s institute. In 1914 he married Helene Froelich.

In Frankfurt Paul Karrer started to work on alkaloids and carbohydrates. Back to the University of Zürich he was appointed Professor of Chemistry and Director of the Chemical Institute in 1919. He soon changed his research fields from inorganic topics to the investigation of organic compounds and worked till his retirement in 1959 with plant pigments, especially carotenoids, vitamins, alkaloids, carbohydrates and glycosides, aminoacids and coenzymes. On 18 June 1971 Karrer died in Zürich. All of Karrer’s investigations were related to biology and medicine. Karrer usually started with the isolation of the pure compounds from natural sources, followed by structure elucidation and finally total synthesis. During these procedures he resumed and refined Tswett’s column chromatography and thus was able to separate e.g. α- and β-carotene. The elucidation of the β-carotene structure in 1930 led him to the general building principle of carotenoids and their relationship with vitamin A. In 1931 he determined the structure of vitamin A and shortly thereafter synthesised some of its derivatives, e.g. retinaldehyde, which in 1935 was shown to be the visual pigment of the eye.

The results were published in more than 1000 scientific papers and in his monograph on carotenoids (1948). His Lehrbuch der Organischen Chemie saw many editions (1930–1940) and was translated in full into six languages. In 1937 Paul Karrer received together with Walter Haworth the Nobel Prize for Chemistry. He held 15 honorary doctorate degrees and a number of awards from universities in Europe and Brasil.
XIX IVACG Meeting, 8–12 March 1999, Durban, South Africa

“Vitamin A and other micronutrients: Biologic interactions and integrated interventions”

The program will include presentations by invited guest lecturers on the meeting theme. Other oral, poster, and video presentations will be selected from submitted abstracts on the following topics:

- Population assessment methods and experiences with these methods (how to know if vitamin A deficiency is a problem of public health significance)

- Biologic interactions between vitamin A and other nutrients, infectious diseases, and vaccines/immunisations

- Program experience combining vitamin A and other nutrients, or vitamin A and immunisation, for women and children

- Experiences in launching programs and moving from policy to practice

- Methods and outcomes of program evaluation

- Bioavailability of vitamin A from dietary sources

- Economic issues in the control of vitamin A deficiency, e.g. economic benefits of investing in vitamin A, costs of programs, cost savings of combining interventions, and efficiencies of alternative intervention schemes

During the 1999 IVACG Meeting there will be an opportunity for discussion of regional operational issues. Interested colleagues should send topics of regional interest and names of potential discussion leaders to the IVACG Secretariat.

IVACG welcomes to its meetings participants from international agencies, national ministries, educational institutions, food and chemical industries, and nongovernmental organisations. Among the more than 400 participants expected to attend are policy makers, program managers, planners, and scientists in health, nutrition, biochemistry, agriculture, horticulture, education, communications, and development.

To receive information about the XIX IVACG Meeting, please write to:

IVACG Secretariat
ILSI Research Foundation
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General information about the Meeting and other IVACG information is available on the World Wide Web at:
http://www.ilsi.org/ivacg.html

IAPB General Assembly in Beijing, September 1999

The International Agency for the Prevention of Blindness (IAPB) will be holding its next General Assembly at Beijing, China, from 5 to 10 September 1999.

Several keynote lectures, plenary sessions, workshops and presentations of model projects will be included. Vitamin A is also among the topics.

Those interested may write to:

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**Purpose of this manual**

The aim of this manual is to provide guidance on monitoring vitamin A programs. It will interest those involved in designing and implementing programs to eliminate vitamin A deficiency. It should also interest those responsible for monitoring some element of a vitamin A program or evaluating its impact.

People from many sectors, at various administrative levels, are involved in actions to eliminate vitamin A deficiency. Managers at a central, provincial, or district level, whether in government, nongovernmental organisations (NGOs), or private industry, may all find this manual useful.

**The manual is designed to:**

- Introduce key concepts, principles, issues, and terminology related to monitoring interventions
to eliminate vitamin A deficiency
• Provide a framework for monitoring the main interventions (i.e., supplementation, dietary improvement, and food fortification)
• Suggest examples of key indicators for measuring progress of these interventions
• Supply information about methods and tools that may be useful in the design and implementation of monitoring activities
• Provide information about the best references and sources of technical support for program monitoring

Requests for copies of this manual and other inquiries or comments can be directed to MI or PAMM.
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Reprint of the SIGHT AND LIFE poster

The updated poster is available in the formats A2, A3 and A4. At present they are printed in English and prints without text are available, too.

Prints in local language?
The prints without text open the opportunity to imprint the text in a local language. Text can be added by hand or other means locally or SIGHT AND LIFE can assist with such an imprint.
This maize-meal bags document efforts to practise food enrichment. For a real contribution to solve the micronutrient problems, in addition to the technological knowledge also the capacity for quality control and an appropriate legislation are needed.

About SIGHT AND LIFE

The Task Force SIGHT AND LIFE was founded in 1986 by F. Hoffmann-La Roche Ltd to help combat xerophthalmia. SIGHT AND LIFE is dedicated to the prevention and eradication of xerophthalmia and all forms of vitamin A deficiency impairing the health of children in numerous developing countries.

SIGHT AND LIFE has supported various international organisations and numerous blindness prevention projects in many countries in Africa, Asia and Latin America. These programmes were supported by vitamin A donations, mostly in the form of capsules, and by donations of educational materials such as books, posters, reprints or videos.

Furthermore, SIGHT AND LIFE supports research projects and gives technical assistance if necessary. Education projects are supported for high-quality education abroad or for participating in local courses in primary eye care, ophthalmology or nutrition. Grants for visiting important meetings, such as that of IVACG, help to promote training and education.

SIGHT AND LIFE issues a Newsletter to disseminate knowledge on vitamin A and to give vitamin A-related information on blindness prevention programmes, publications and scientific meetings.