



REPORT OF THE SEVENTH MEETING OF THE WHO PROGRAMME ADVISORY GROUP
ON THE PREVENTION OF BLINDNESS

WHO Regional Office for the Eastern Mediterranean, Alexandria, Egypt

16-19 March 1987

INTRODUCTION

The Seventh Meeting of the WHO Programme Advisory Group on the Prevention of Blindness was held from 16 to 19 March 1987 at the World Health Organization's Regional Office for the Eastern Mediterranean in Alexandria, Egypt. The meeting was opened by Dr M.H. Wahdan, Director, Disease Prevention and Control, who read a message from the Regional Director (see Annex 1).

Dr R.P. Pokhrel, Nepal, and Dr I. Badr, Saudi Arabia, were unanimously elected Chairman and Vice-Chairman respectively. Professor A. Sommer, USA, acted as Rapporteur. The Agenda for the meeting and the List of Participants are attached as Annexes 2 and 3.

1. REVIEW OF PROGRAMME DEVELOPMENT

1.1 Global Level

The progress of the WHO Programme for the Prevention of Blindness (PBL) during 1985 and 1986 has, in general, been satisfactory, as is reflected by an increasing number of countries implementing national blindness prevention programmes based on primary health care. At present, there are some 50 countries where national committees/organizations have been established, with primary eye care schemes forming the main strategy for blindness prevention. Furthermore, the concept of a primary health care approach to the prevention of blindness has now become a universal model for many country programmes, with the gradual integration of eye care as a component of primary health care. Progress has also been made in the assessment of the magnitude of avoidable blindness in a number of countries, with the increasing availability of new and epidemiologically sound data on blindness and its causes. This has undoubtedly resulted in a heightened awareness and the interest of many countries in taking action against blindness, as demonstrated by more and more countries requesting collaboration with the PBL Programme in the development of national programmes. There is no doubt, however, that many developing countries are facing increasing constraints with regard to the mobilization of the required resources, and this is particularly noticeable in the African Region, where the majority of least developed countries is found. Thus, the fact that blindness prevention may be low on the list of priority health programmes in such countries tends to reflect the serious implications of lack of resources rather than lack of interest in, or commitment to, the prevention of blindness as such.

Collaboration with nongovernmental organizations (NGOs) in the field of blindness prevention has been one of the cornerstones in the development of the PBL Programme. During 1985 and 1986, this collaboration has been further strengthened, not only at the global level, but also increasingly at the regional and national levels in order to provide effective support to countries. At the global level, the establishment of the "Consultative Group of Nongovernmental Organizations to the WHO Programme for the Prevention of Blindness" has been of particular importance in facilitating the dialogue between the several NGOs working with the PBL Programme, in addition to the usual involvement of these NGOs in the meetings of the WHO Programme Advisory Group on the Prevention of Blindness.

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During the period under review, continued efforts have been made to mobilize extrabudgetary funds for the PBL Programme. An increasing amount of such funding has been received, particularly from the Arab Gulf Programme for United Nations Development Organizations (AGFUND), from the Japan Shipbuilding Industry Foundation (JSIF) through the Sasakawa Health Trust Fund and from UNDP for one Regional Programme. In this respect, further efforts and initiatives are needed in order to make available the resources needed for programme development in a rapidly increasing number of countries.

Technical reports and documents have been elaborated and disseminated by the PBL Programme over the last two years and a number of meetings have also been held at WHO Headquarters, in WHO Regional Offices and in specific countries :

- The Sixth Meeting of the WHO Programme Advisory Group on the Prevention of Blindness took place in Geneva in March 1985, jointly with an Interregional Meeting, and included a review of national programme development in selected countries (document WHO/PBL/85.10).
- In conjunction with the Technical Discussions of the World Health Assembly in May 1985, which focused on collaboration with NGOs for the attainment of "Health for All by the Year 2000", a consultative meeting was arranged with member organizations of the International Agency for the Prevention of Blindness (IAPB).
- A working group on "The provision of spectacles at low cost" was convened in June 1985. The report of this group will shortly appear as a WHO publication.
- A working group on "Essential Ophthalmic Surgery" met in August 1985 to consider what surgical procedures relating to eye care and prevention of blindness should be considered at the first referral level (document WHO/PBL/85.11).
- A working group was convened in October 1985 in Geneva to revise the WHO/PBL Eye Examination Record. The new form has been designed to provide more comprehensive information, and is presently being field-tested as part of research development in selected countries.
- A meeting of the major international NGOs associated with the International Agency for the Prevention of Blindness was convened in May 1986, as a follow-up to the meeting held in 1985. Terms of reference were laid down for the "Consultative Group of NGOs to the PBL Programme". This meeting also dealt with the specific issue of collaboration in field projects (document WHO/PBL/86.12).
- The information stored in the Global Data Bank on Blindness has been updated, and it is envisaged that a revised version of the previous document relating to this be issued during 1987¹.
- An Interregional Meeting on the Management of Cataract within Primary Health Care Systems was convened in Indonesia in December 1986. During this meeting, strategies for action against curable blindness due to cataract and the growing backlog of unoperated cases in many developing countries were developed (document WHO/PBL/87.13).

Apart from the meetings held between the international NGOs and the PBL Programme, the following specific activities have been undertaken on a collaborative basis :

- work on the elaboration of posters on primary eye care skills and eye health education, jointly with Helen Keller International Inc. (HKI);

¹ Document WHO/PBL/87.14 issued in October 1987.

- further dissemination of the poster on Primary Eye Care previously developed together with the International Eye Foundation (IEF);
- the organization of a Task Force on Priorities for the Prevention of Blindness in Africa, which took place at the WHO Regional Office for Africa in Brazzaville, Congo, in October 1986, and was entirely sponsored by Christoffel Blindenmission (CBM), Helen Keller International Inc. (HKI), the International Eye Foundation (IEF), Operation Eyesight Universal (OEU) and the Royal Commonwealth Society for the Blind (RCSB);
- the development of a joint plan for support to blindness prevention in Burma between CBM and WHO;
- continued support from several NGOs to national blindness prevention programmes together with the WHO Programme.

The PBL Programme has, during the period under review, collaborated with other WHO programmes, as follows :

- Filarial Infections (FIL), particularly in the field of chemotherapy of onchocerciasis;
- Nutrition (NUT), in relation to xerophthalmia, particularly concerning the 10-year plan of action for the prevention of vitamin A deficiency and xerophthalmia;
- Leprosy (LEP), in connection with research on ocular leprosy and the development of guidelines for the prevention of visual loss due to leprosy;
- Maternal and Child Health (MCH), concerning the prevention of conjunctivitis in the newborn;
- the Onchocerciasis Control Programme in West Africa (OCP), with regard to the analysis and publication of results of the ophthalmological evaluation of that programme.

The PBL Programme has continued to support applied research and training in relation to blindness prevention. Most of this has been done through the existing network of 13 WHO Collaborating Centres for the Prevention of Blindness.

The National Eye Institute (USA) has given support to field surveys on blindness and investigations into the utilization of eye health care services, and further funds have been pledged for specific research projects over a three-year period from September 1986.

In 1985, the Edna McConnell Clark Foundation provided a research grant for the development of a simplified system for the grading of trachoma and its complications. Field work has been undertaken in Burma and Tunisia, and the results of the first phase of this research will be published in 1987¹. It is envisaged that field testing of the new grading system continue, together with the training of auxiliary staff, in selected countries over the next year, depending on the further availability of funds.

1.2 The African Region

The commonest causes of blindness in Africa are onchocerciasis, trachoma, cataract, vitamin A deficiency, measles and trauma. The endeavours to prevent blindness have been hampered by the lack of awareness by the community and by the shortage of human and material resources. When available, these resources are mainly confined to the urban centres, with hardly any in the town fringes and rural areas where the majority of the people live.

¹ Bulletin of the World Health Organization 1987 ; 65 (4) : 477-483

There is a general lack of information regarding causes and frequency of blindness in the Region. WHO is therefore collaborating with the Member States and several NGOs in carrying out blindness surveys in the countries. Limited surveys have already been carried out in Uganda (1969), Ghana (1972), Swaziland (1974), Burkina Faso (1975, 1986), Chad (1979), Ethiopia (1981), Mali (1981, 1985), Togo (1981, 1982, 1985, 1986), Nigeria (1977), Zambia (1978, 1985), and Benin, Côte d'Ivoire, Guinea, Mauritania and Senegal in 1985. The surveys have confirmed that the prevalence of blindness in most of these countries is 1% and over.

Several countries in Africa have instituted personnel training programmes, notably Gambia, Ghana, Kenya, Lesotho, Malawi, Mali, Mauritania, Niger, Nigeria, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe. WHO is participating in the training of ophthalmic medical auxiliaries which is being carried out at the Lilongwe Auxiliary Training Institute in Malawi. The African Institute of Tropical Ophthalmology (IOTA) based at Bamako, Mali, has been redesignated a WHO Collaborating Centre for the Prevention of Blindness, and, as the sole Collaborating Centre in the Region, is involved in training as well as research. During 1987, an inventory of the training institutes available in the Region will be made for the information of all Member States who might wish to avail themselves of these facilities for training their national staff.

A Task Force on Prevention of Blindness was held in Brazzaville from 20 to 22 October 1986. This meeting was organized by WHO in collaboration with those NGOs involved in blindness prevention in Africa. Representatives of several Member States, the NGOs and UNICEF participated and reviewed the blindness situation in Africa, making recommendations with regard to suitable strategies for blindness prevention including mobilization of resources.

The priority being accorded to blindness prevention has been demonstrated by the number of countries which have already formulated national plans and/or programmes and/or established committees. These countries include Botswana, Burkina Faso, Ethiopia, Gambia, Ghana, Kenya, Lesotho, Malawi, Mali, Mauritania, Niger, Swaziland, Uganda, United Republic of Tanzania and Zambia. They have also designated national programme coordinators and chairmen of the committees.

Member States have continued to allocate increasing portions of the WHO-provided country programme budgets to national activities for prevention of blindness. The amount thus provided has grown from zero in 1981 to \$131 000 in 1987.

In 1986, drugs and equipment were procured for Chad and Uganda at the cost of approximately \$20 000 for each country. The blindness prevention programme also participated in a survey of schoolchildren being carried out in Ouagadougou, Burkina Faso, and contributed towards the organization of the national seminar on blindness held in Mauritania.

The Gambia has a national eye care programme which started in 1984. As one of its activities, a national survey to estimate the prevalence and distribution of blindness and visual loss, and to determine the main causes and current action needed was carried out in March/April 1986. The survey also had an applied research component in the field testing of the newly revised WHO/PBL Eye Examination Record (Version II). The survey was conducted at relatively low cost using, in the main, local personnel, e.g., ophthalmic medical assistants, who in the process achieved a better understanding of the entire population and its health and health-related problems.

The application of the information resulting from this survey is twofold; the design and methodology are simple and can be adopted by countries using ophthalmic medical assistants at a fraction of the cost of traditional surveys. Secondly, the results of the survey, although pertaining to the Gambia, may be a good "guestimate" for countries of Africa within the 10° - 20° latitudes north of the equator.

By a multistage random sampling method, 8264 people were examined - a coverage of 94%. The blindness prevalence rate (ICD-9¹ categories 3, 4 and 5) was found to be 0.7%, and the low vision rate (ICD-9 categories 1 and 2) was 1.4%. The main causes of blindness were cataract (55%), corneal opacities (28%) including trachomatous corneal opacities (17%) and Phthisis bulbi (9%). Collection of data on action needed will help in the provision of services and in monitoring and evaluation.

1.3 The Region of the Americas

Supported by funds identified by the IAPB, an ophthalmologist was appointed in April 1985 as a full-time Regional Adviser for the Prevention of Blindness at the Regional Office for the Americas in Washington, D.C.

The six WHO Collaborating Centres for the Prevention of Blindness as listed later in this report are carrying out projects in clinical and operational research and in training of personnel.

Various NGOs, including IAPB, IEF, HKI, RCSB and OEU have continued collaborating both separately and as components of the Inter-Agency Coordinating Group for the Caribbean Eye Care Programme.

Nine Latin American countries and a large number of Caribbean countries have local, national or intercountry blindness prevention programmes respectively. In addition, with the support of AGFUND, a further nine countries will start their own programmes in the near future.

The following teaching materials have been prepared during the past two years : an audio-visual presentation in Spanish to encourage governments to develop prevention of blindness programmes; a Primary Eye Care Manual (English); a Manual of Applied Ophthalmology (Spanish); a Manual of Ophthalmology (Spanish), and Guidelines for the Evaluation of Eye Health Care Services (Spanish and English).

The Regional PBL Programme has been represented at national congresses of ophthalmology both in Chile and Peru, where presentations were made. In August 1986, a three-week training seminar on the management of blindness prevention programmes was held at the Public Health School of Sao Paulo, Brazil, sponsored by WHO/PAHO in cooperation with the WHO Collaborating Centre for the Prevention of Blindness in Sao Paulo, and partially financed by MSD/Chibret International; it was attended by 15 managers of blindness prevention programmes from nine Latin American countries.

The Regional PBL Programme has developed, and/or collaborated in, the preparation of seven protocols for new research projects, namely : a survey on eye diseases and causes of blindness in Guatemala; an intervention model for eye care in Cali (Colombia); a comprehensive model for eye care in Easter Island and Valparaiso (Chile); cataract-free zones in Chimbote (Peru) and Campinas (Brazil); an operational research project on community interactive participation for eye care, and a survey on ocular involvement in leprosy patients.

All the data available identify cataract as the leading cause of blindness throughout the Region, followed by glaucoma and diabetic retinopathy. Refractive errors have been identified as the main cause of ocular distress.

In view of the main problems and constraints identified, the Regional PBL Programme's technical cooperation must be directed towards the improvement of community-based eye health

¹ World Health Organization. International Classification of Diseases (9th revision). Geneva : World Health Organization, 1977.

care services, fully integrated with the general health care system, and towards the implementation of simple techniques for the early diagnosis and treatment of the main causes of blindness at the community level.

1.4 The Eastern Mediterranean Region

The overall blindness prevalence rate in the Eastern Mediterranean Region is approximately 3%, which means that there are approximately 9.6 million blind people in this Region. The rate varies both from country to country and also within each individual country. It is higher in trachoma-endemic areas (over 4%) and lower in non-endemic ones (0.9%). The principal causes of blindness in the Eastern Mediterranean Region are trachoma and other eye infections, cataract, glaucoma and trauma.

Trachoma is a common cause of blindness in Afghanistan, Democratic Yemen, Oman, Pakistan, Saudi Arabia, Somalia, Tunisia and Yemen. However, national programmes and other measures against trachoma and infectious eye conditions, together with the improvement of socioeconomic standards, have resulted in a progressive reduction in the incidence of blindness caused by trachoma in some countries.

The other important cause of blindness appears to be cataract. In urban areas of Egypt it is the cause of 37.5% of blindness while it accounts for 31.9% in rural areas. In Pakistan, cataract is the cause of 60% of blindness and in Jordan 21.4%. In Afghanistan, it is the second most important cause of blindness (25%). Congenital cataract is reported as a significant cause of blindness in children in Jordan, where the main reason is probably the large number of consanguineous marriages. Furthermore, retinitis pigmentosa is also considered a common problem in Jordan.

Onchocerciasis is the main blinding condition in southern Sudan. The prevalence rate of blindness in this part of Sudan is estimated at 5.1%, of which 4.5% is due to onchocerciasis. Vitamin A deficiency has been reported to be common in Afghanistan where cases of xerophthalmia and keratomalacia have been seen in children.

A preliminary survey in one country has indicated that between 15% and 20% of schoolchildren have refractive errors and may be in need of spectacles. In view of the fact that, in some Member States, spectacles are not commonly available and are usually quite expensive, many cases of visual impairment remain uncorrected.

Regional activities have continued to focus on cooperation with Member States in promoting the planning and implementation procedures for national prevention of blindness programmes. The Regional policy and strategy in this field entail developing programmes to include eye care in health care services, more particularly primary health care services. Special emphasis has been placed on community participation and community health development, and on the training of health personnel in order to detect and treat disease as early as possible using simple methods and thus to avoid any further deterioration.

Collaboration consists mainly of providing consultancy services for the formulation of national programmes with emphasis on primary eye care and its integration with primary health care, and on health manpower development. Such services were provided to many countries to assist in the formulation or updating of national programmes and plans of action for prevention of blindness.

Collaboration with Pakistan, the country with the largest population in the Region, has been very fruitful in the field of promoting national efforts for the provision of low-cost spectacles, especially for schoolchildren. Collaboration in the training of manpower (opticians and hospital refractionists) for the screening of children's eyesight and of refractive errors, was also extended to facilitate the provision of spectacles to needy children.

EMRO has been successful in promoting the concept of primary eye care which has gained increasing acceptance in the Member States of the Region. Some countries are already implementing training programmes for different categories of health personnel organizing short- and long-term courses on the delivery of eye health services, as part of school health services, maternal and child health care and other primary health care services. WHO fellowships were awarded to nationals from a number of countries for training in public health ophthalmology.

In order to promote and develop the training activities concerning blindness and visual impairment in the Region, close collaboration is maintained with international and nongovernmental organizations both in the Region and globally. Regional Collaborating Centres are being identified and supported to assist in the implementation of the programme particularly in the fields of training and in research.

1.5 The European Region

While there has never been an independent blindness prevention programme in this Region, activities related to blindness prevention and to the care of visually disabled persons have nonetheless continued. Although no meetings have been organized lately, mention should be made of the following meetings held within the period 1978-1981 :

- The Role and Functions of National Institutes of Ophthalmology (1978)
- Economic Aspects of Eye Health Care (1980)
- The use of residual vision by visually disabled persons (1981)

The International Year of Disabled Persons in 1981 stimulated the establishment of a Regional programme on "disability prevention and rehabilitation" with components for the prevention of visual impairment and the care of visually disabled persons.

With regard to 1987-1989, there has been a modest development in the form of a voluntary donation from Belgium (\$10 000) which will permit the organization of a consultation of a few national counterparts and potential collaborating centres to assess European needs in comprehensive eye care. The main areas requiring action have already been identified by the 1981 meeting on "The use of residual vision by visually disabled persons". Coverage of the needs of the European population in comprehensive eye care is however only partially known. Support will be given by the Regional programme to countries identifying visually impaired persons, and developing local, district, regional and national registers of these persons.

The incidence and prevalence of visual impairment is highest among the aged. The Regional programme is therefore placing strong emphasis on the early detection of visual impairment in old age, followed by early intervention.

In order that elderly people with a visual disability maintain their position in society, they may need help in how to manipulate the three environmental variables: light, size and contrast. Part of the Regional programme, therefore, will deal with environmental aspects important in blindness prevention.

People with visual disability can be divided into three broad groups based on the time of onset of the problem:

- (a) those who acquired the problem at birth or before and who have not experienced normal vision,
- (b) those who acquire the problem during their formative years and have some limited experience of normal vision,
- (c) those who acquire visual disability in later life after developing a lifestyle based on normal vision.

Group (c) mainly involves elderly persons and the problem is, therefore, how to enhance the visual abilities of this group. Services have to be developed accordingly. Special attention will be paid to the identification and promotion of appropriate aids which would enable people with residual vision to maintain their independence.

Experience in the field of disability shows that there are many donor countries and agencies in Europe, but that donations usually go to countries outside the Region. Possibilities of collaboration with non- and inter-governmental organizations have to be explored, as Europe is not only a resource region, but also a region in need, particularly in the south and south-east.

In conclusion, prevention of blindness activities in Europe will be developed within the context of the Regional programme of disability prevention and rehabilitation under the slogan "Better opportunities for disabled persons".

1.6 The South-East Asia Region

The period under review was marked by an intensification of collaborative activities in the area of blindness prevention in Member States. The main emphasis has been on the development and strengthening of the infrastructure for the delivery of essential eye care as a part of primary health care. Such developments have included the planned training and deployment of all levels of health personnel, the provision of referral facilities and also the delivery of services through outreach mechanisms to underserved communities. While an intensified project for the control of blindness from glaucoma has been supported in three selected countries, cataract relief services have been strengthened in most of the Member countries and steps have been taken to support low-cost spectacle schemes. Health systems research has been promoted and supported with a view to enhancing the capabilities of Member States in conducting and utilizing such research in programme planning and implementation. The mobilization of resources from extrabudgetary sources of funding has facilitated the extension of programme activities to hitherto underserved areas. Group educational activities with intercountry participation at a regional level have served as a forum for participation of key representatives from Member countries in programme development.

The main areas in which support has been provided through WHO's collaborative programme include, inter alia:

- Epidemiological assessment of blindness and ocular morbidity in Bangladesh, Burma, India, Indonesia and Thailand.
- The managerial process for national health development as applied to blindness prevention programmes through support for training in public health ophthalmology for trainees from Nepal and Thailand.
- Training of manpower at all levels in varying aspects of eye care through group educational activities and fellowship training in most countries.
- The strengthening of the infrastructure at all levels, with particular emphasis on district level facilities and an effective referral system. This is evidenced by the rapid development of intermediate eye care facilities in Indonesia, Nepal, Sri Lanka and Thailand.
- The delivery of services through a primary health care approach as the basic strategy of all national programmes.
- Health systems research in respect of prevention of blindness activities, by conducting a Regional workshop and supporting national level workshops and studies in selected countries.
- Monitoring and evaluation of programmes following guidelines prepared at an intercountry workshop.

- Resource mobilization from multilateral, bilateral and nongovernmental organization sources to supplement the regular budget funds for programme implementation in most countries.
- Dissemination of information to facilitate the updating of professional knowledge and skills through the procurement of educational material and its distribution to all member countries.
- Initiatives in selected countries against blindness from leprosy, in conjunction with the Regional leprosy control programme, and as part of national blindness prevention activities.

Nearly all countries of the Region have developed national programmes for the prevention of blindness and visual impairment. Such programmes, embodying the concept of a primary health care approach, have been refined, based on periodic evaluation. Priorities have been revised based on new epidemiological information and there has been an extension in the area of coverage of primary eye care services.

With regard to future activities, the spin-off from the UNDP project for the control of blindness from glaucoma has been the planned setting-up of a tonometer standardization facility at the WHO Collaborating Centre for the Prevention of Blindness in New Delhi, as well as the setting-up of three regional centres for training in glaucoma management, with particular reference to community-oriented activities. A further expected outcome is the funding of the research study now under way, which would determine the course of future interventions to control blindness from glaucoma.

A project proposal has been submitted to UNDP based on a "needs assessment" carried out by an UNDP/WHO Mission in consultation with the Regional Office and Member States. Support totalling US\$500 000 is pledged for the proposed activities which include training of personnel, the setting-up of low-cost spectacle schemes and specific interventions against cataract and blinding corneal infection through community-oriented programmes. A feature of the project is the direct involvement and participation of NGOs in the implementation of activities.

It is also proposed to evaluate the ongoing ophthalmic manpower training programmes in the Member countries through an intercountry workshop in late 1987 and also to provide consultation services for the evaluation of selected national programmes.

Resources are being explored and mobilized from intercountry Research Promotion and Development funds to support health systems research in the area of blindness prevention, including studies on blindness from leprosy as a follow up of initiatives already taken at the regional level. Further attempts at resource mobilization are to be intensified, including collaboration with NGOs.

The major sources of extrabudgetary funds for prevention of blindness activities in the South-East Asia Region are set out below :

<u>Source</u>	<u>Beneficiary Countries</u>
AGFUND	
First Contribution	Bangladesh, Indonesia, Nepal, Thailand
Second Contribution	Bangladesh, Indonesia, Maldives, Nepal, Sri Lanka, Thailand

<u>Source</u>	<u>Beneficiary Countries</u>
UNDP	
1982/86 Cycle	Bangladesh, Burma, India, Sri Lanka
1987/91 Cycle	Bangladesh, Bhutan, Burma, Nepal, Sri Lanka
Japan Shipbuilding Industry Foundation	All Member States
Christoffel Blindenmission	Burma
Andheri Hilfe	Bhutan (under negotiation)

1.7 The Western Pacific Region

During 1985-1986, WHO collaboration has emphasized the development of national blindness prevention programmes and focused on primary eye care, especially in underserved areas in the developing countries of the Region. Primary eye care - comprising maintenance of simple eye hygiene, treatment of common eye ailments and prevention of avoidable blindness - is gradually gaining acceptance as a major approach. In the developing countries, eye care is not yet at an acceptable level for various reasons. Emphasis was therefore placed on determining the causes and magnitude of the problem of avoidable blindness. Population-based surveys are continuing in China, Fiji and Viet Nam, from which the prevalence of blindness is known to range from 0.6% to 0.8%.

National blindness prevention programmes were initiated in Fiji, the Lao People's Democratic Republic, Vanuatu and Viet Nam, while strengthening of national programmes continued in China and the Republic of Korea. Efforts were supported through technical collaboration, particularly consultant support in China, Fiji, Kiribati, the Lao People's Democratic Republic, Tonga and Viet Nam. National seminars and workshops were conducted with WHO collaboration in seven countries of the Region, and focused on different priorities ranging from cataract surgery, primary eye care, and promotion of blindness prevention in early childhood, to laser applications in ophthalmology. In many countries, the backlog of cataract is still a major problem (approximately 50% of all the blind), and efforts to train personnel in cataract surgery and to provide essential supplies and equipment were made in respect of China, Fiji, the Lao People's Democratic Republic and Viet Nam. Nationwide activities generated since the last biennium, especially in the control of trachoma in China, Fiji and Viet Nam, continued to gain momentum during the period with the organization of training programmes for health workers and the provision of supplies, equipment and medicaments. Support for the xerophthalmia control programme has extended to the Philippines and Viet Nam.

National training courses on the management of cataract and on public health ophthalmology with special emphasis on primary eye care were supported in China and Viet Nam in 1985. The training of nationals abroad was also supported during the period.

Studies on low vision in China and on the refractive status and eye health services among Korean schoolchildren are also receiving WHO support. Viet Nam was provided with funds for research in the area of programme evaluation.

The programme is gradually gaining momentum in the developing countries of the Region and is receiving support both from bilateral and multilateral agencies. Countries will need considerable support in the years to come if they are to reach an acceptable level of eye care, especially in underserved areas. As there is a serious shortage of technical personnel with clinical skills, efforts are being encouraged for the local training of physicians in eye care, as, for example, is taking place in China and Fiji.

In addition to regular budget funds, the Regional programme continued to receive financial support from JSIF as well as technical support from the PBL Programme at Headquarters.

2. REVIEW OF RECENT PROGRAMME DOCUMENTATION

In their review of programme documentation elaborated over the last two years, the participants noted the following :

- The report of the working group on the provision of spectacles at low cost would shortly be issued as a WHO publication, and will be widely disseminated to interested parties. It is hoped that this publication will stimulate interest in setting up local schemes for the provision of spectacles in a number of countries which have not yet paid heed to this in their national blindness prevention programmes.
- The report of the working group on essential eye surgery (reference WHO/PBL/85.11) is being included as an integral part of the WHO Manual on Essential Surgery. This manual is presently being finalized, and will be field tested during 1987 in selected countries.
- The draft report of the Interregional Meeting on the Management of Cataract within Primary Health Care Systems was noted with appreciation, as it focuses attention on a growing problem of avoidable blindness in many countries. The participants recommended that this report, once available in its final version, should be as widely disseminated as possible in all WHO Regions, to stimulate more action against the backlog of unoperated cataract which exists in many countries.
- The report of the first meeting of the Consultative Group of NGOs to the WHO Programme for the Prevention of Blindness (WHO/PBL/86.12) provides a useful summary of issues of particular concern to the international NGOs collaborating with WHO in the field of blindness prevention. It was recommended that continued wide dissemination be given to the minutes of these meetings in the future, and that the Chairman of this group of NGOs should report to the Programme Advisory Group during their meetings to enhance the existing interaction between NGOs and the Advisory Group.

In this context, and noting the report concerned, it was appreciated that the holding of a Task Force on Priorities for Blindness Prevention in Africa, entirely supported by NGOs, was a good example of collaborative efforts between those NGOs and WHO at the regional level.

- When reviewing the note on "available data on blindness", as revised in 1987, the participants debated the future format of a data bank on blindness. It was recognized that the collection of national statistics on blindness and its causes was steadily improving, with new and more reliable and accurate information becoming available from an increasing number of countries. There is still, however, a serious shortage of data from some countries, and it was felt that a careful review of available data should be undertaken to obtain more reliable regional estimates of blindness rates by cause; a recommendation to this effect was therefore formulated by the Group. It was also pointed out that the different age-structures between developed and developing countries may tend to mask a problem of avoidable blindness. In developing countries with very "young" populations, a relatively low blindness rate may be the consequence of the demographic situation (a small elderly population). As an example, the results from a recent nationwide population-based survey in the Gambia were highlighted; the rate of blindness found in that population was 0.7%, but this would be equivalent to 1.4%, i.e., doubled, if the population age-structure had been the same as in the United Kingdom. Thus, the possibility of "standardizing" blindness rates between countries could be considered in the future development of the data bank on blindness, in order to better reflect demographic situations in relation to blindness.

3. ACTIVITIES OF THE WHO COLLABORATING CENTRES FOR THE PREVENTION OF BLINDNESS

The existing network of WHO Collaborating Centres for the Prevention of Blindness comprises 13 institutions, which are located as follows :

African Region

- The African Institute of Tropical Ophthalmology, Bamako, Mali

The Region of the Americas

- Public Health Ophthalmology Service, Sao Paulo State Department of Health, Sao Paulo, Brazil
- Dr Rodolfo Robles V. Hospital, Guatemala
- Santo Toribio de Mogrovejo Hospital, Lima, Peru
- International Center for Epidemiologic and Preventive Ophthalmology, Johns Hopkins University, Baltimore, Maryland, USA
- National Eye Institute, National Institutes of Health, Bethesda, Maryland, USA
- Francis I. Proctor Foundation for Research in Ophthalmology, University of California, San Francisco, USA

The Eastern Mediterranean Region

- King Khaled Eye Specialist Hospital, Riyadh, Saudi Arabia
- The Institute of Ophthalmology, Tunis, Tunisia

The European Region

- International Centre for Eye Health, Institute of Ophthalmology, London, UK
- Department of Viral and Allergic Eye Diseases, Helmholtz Research Institute of Ophthalmology, Moscow, USSR

The South-East Asia Region

- Dr Rajendra Prasad Centre for Ophthalmic Sciences, All-India Institute of Medical Sciences, New Delhi, India

The Western Pacific Region

- Department of Ophthalmology, Juntendo University School of Medicine, Tokyo, Japan

The participants took note of the ongoing designation procedure for another Collaborating Centre in the Western Pacific Region, namely the Beijing Institute of Ophthalmology, Beijing, People's Republic of China.

All the Collaborating Centres had submitted summary reports on their activities over the last two years, and those reports are reproduced in Annex 4. Additional information and comments were made by the Directors of those Collaborating Centres participating in the present meeting.

In the discussion of the activities undertaken by the Collaborating Centres, the wide range of activities was noted; in general, however, there is still a need for more health systems research to be promoted or initiated by the Collaborating Centres, particularly when

they are playing a role, or are closely involved, in national blindness prevention programmes. A general recommendation on the need for operations research to maximize programme efficiency and effectiveness in the countries concerned was formulated.

The participants took note of the following recent developments :

- The encouraging preliminary results obtained in the treatment of keratomycosis. Further studies were recommended by the Group with the results to be communicated as soon as possible.
- The promising results achieved by the new drug, ivermectin, in the treatment of onchocerciasis and potentially in reducing the transmission of Onchocerca volvulus.
- The potential value of a new, relatively inexpensive, portable Yag laser, particularly in view of its potential application in providing a new approach to the management of glaucoma. Further field testing is still needed to determine the applicability of this new technology under various conditions.

4. TRAINING OF PERSONNEL IN EYE CARE

The issue of training of personnel in eye care had been included in the agenda of the present meeting of the Advisory Group following a request made by the NGOs participating in the meeting of the Consultative Group in 1986. It was explained by some of the NGO participants that the training of personnel is one of the top priorities for development and funding by their respective organizations. There are several promising developments underway in projects supported by NGOs, particularly in countries in Africa and in South-East Asia. The setting-up of training courses on a TCDC basis is working out well, although there are rarely any formal arrangements between countries. The ongoing training schemes for clinical officers and ophthalmic assistants in the United Republic of Tanzania and in Malawi are, in fact, based on cooperation between countries in sending students for training, despite the absence of formal political agreements.

One problem highlighted by some of the NGO participants is the lack of official recognition of the courses set up, particularly in Africa. This has led to some trainees asking for diplomas, which would be recognized by their Ministry of Health, but so far these have only been given in the course in Malawi, where WHO is countersigning such diplomas. In the discussion of this complex issue, it was felt that WHO recognition of training courses in eye care may play a very important role in facilitating the acceptance by the national authorities of the trainee's level of knowledge and competence, after having completed a training course in another country.

The conditions laid down by WHO for official recognition of training courses can be summarized as follows :

- The aim and objectives of the training should be in line with WHO's policy and priorities, e.g., primary health care development and Health for All by the Year 2000.
- The curriculum should be reviewed and accepted by WHO.
- There is a limited period of recognition, usually for 3-year periods.
- WHO recognition is limited to the course followed, and therefore does not interfere with national authorities' decisions as to what tasks the trainee may or may not perform.
- All neighbouring countries in areas where a WHO-recognized training course is offered should be informed of the course and the reasons for it receiving such recognition.

It was pointed out during the discussion that CBM and RCSB would be particularly interested in involving WHO in their training courses in one or more African countries. A letter to the WHO Regional Office for Africa would be prepared by those NGOs to that effect. It was noted that the issue of WHO recognition of training courses had also been discussed during the Regional Task Force on the Prevention of Blindness in Brazzaville in October 1986. It was concluded that the clarification of this issue would lead to another important field of collaboration between NGOs and the PBL Programme.

The issue of training of personnel was also brought up in connection with the necessity for managerial training. Some of the Group members pointed to the need for improved management of national blindness prevention programmes, since national staff often have very limited knowledge of the management aspects of running a programme. In the course of the discussion, there was agreement on the need for a fairly short (2- to 4-week) course in management aspects for national programme managers responsible for the daily running or evaluation of a programme. Such a course could probably be arranged at one or more of the WHO Collaborating Centres for the Prevention of Blindness, depending on the interest and support such a course would attract. It was agreed that the training in managerial skills is a matter which should receive more attention in the future development of programme activities.

5. COLLABORATION WITH NONGOVERNMENTAL ORGANIZATIONS

5.1 Christoffel Blindenmission (CBM)

CBM was founded over 70 years ago as an organization for the welfare of the blind, but has in the last 25 years extended its activities to include the treatment and prevention of blindness. It is active in over 90 countries of the world, and works with over 100 Christian partners and, in some cases, with national societies for the blind.

In the past 10 years, CBM has become actively involved in national blindness prevention programmes, for example, in Nepal, Somalia, and the United Republic of Tanzania. The main emphasis is on (a) training of all types of eye care personnel, (b) developing appropriate and cost-effective methods of tackling avoidable blindness, and (c) publishing short, basic manuals on eye care and related problems.

CBM is also involved to a lesser extent with other handicaps, including deafness, the mentally-retarded, the physically-handicapped and leprosy.

5.2 Foresight

Foresight is a relatively new organization in the field of blindness prevention, having been created about seven years ago under the auspices of the Australian National Council of and for the Blind (ANCB) with encouragement from Sir John Wilson. It was set up to provide assistance to other countries in the development of their eye care services, a role not previously fulfilled by ANCB, which is the "umbrella" organization in the field of visual impairment in Australia, and, as such, does not provide direct services to the blind.

The role of ANCB is to bring together its members to exchange ideas and to discuss services which are constantly evolving in response to changes in community attitudes and as a result of the introduction of new technology, which may have considerable impact on the lives of visually impaired persons.

The service agencies for the blind, together with the various professional groups (i.e., ophthalmologists, optometrists, etc.) and the associations of the blind are the principal members of ANCB, and they were keen to establish and support Foresight, which also receives assistance from the Australian Government, as well as from private contributors.

Foresight currently has programmes in Bangladesh, Fiji, India, Papua New Guinea, South Pacific Island countries, and Western Samoa. The types of programmes Foresight has been concentrating on are :

- training - in this connection there are programmes in ophthalmology, rehabilitation and low vision services;
- equipment - mostly relating to the above training programmes;
- the provision of ophthalmic and optometric services.

Foresight works with other international NGOs, such as CBM, HKI and RCSB, jointly developing and funding programmes.

The Australian Government also has a considerable commitment to eye care in the South Pacific region and has allocated a large sum of money through its bilateral aid programme. The current Australian bilateral programme is expended solely on flying in ophthalmic teams for short periods.

While it is pleasing that the Australian Government has placed a high priority on eye health, and important that it should continue to do so, it may, nonetheless, be appropriate for WHO to resolve to use its influence to ensure that bilateral eye care programmes give priority to training of eye care personnel over other forms of assistance.

5.3 Helen Keller International Inc. (HKI)

With a 70-year record of rehabilitation and blindness prevention in over 80 countries, Helen Keller International today provides technical assistance to ministries of health around the world and to multilateral and private voluntary organizations. HKI's major interventions include child survival initiatives and blindness prevention through programmes in primary eye care, nutritional blindness, trachoma and cataract. Education and rehabilitation efforts continue to form a substantial part of HKI's programme portfolio receiving increased support as innovative educational strategies in rehabilitation are developed.

For the past 15 years HKI has devoted major attention to the study and control of nutritional blindness, expanding the vitamin A network to deliver adequate supplies to increased numbers of children at highest risk - most especially in Bangladesh, Indonesia, the Philippines, and across the Sahel swath of Africa from Mauritania to Ethiopia.

Comprehensive programmes to control avoidable blindness have also been expanded. Pilot projects in the delivery of primary eye care are now operating in Fiji, Peru, the Philippines, Sri Lanka and the United Republic of Tanzania, and are in the early stages in Indonesia, Kenya, Morocco and Papua New Guinea.

Community-based services for adults and children are being extended. Demonstration programmes to bring the rural blind to full independence are now well-established in Fiji, Papua New Guinea, Peru, the Philippines, Sri Lanka, and are being developed in Thailand. Of special interest is the recent publication in the HKI technical series of the illustrated handbook Community Based Rehabilitation of the Rural Blind : A Training Guide for Field Workers. This text has enjoyed wide distribution and use.

With the publication of To Restore Sight : The Global Conquest of Cataract Blindness, HKI, with the assistance of the National Institutes of Health, and funded by the Japanese Shipbuilding Industry Foundation, has assisted in setting the stage for a global programme to eliminate cataract blindness. Demonstration programmes in Fiji, Indonesia, Peru, the Philippines, Sri Lanka and the United Republic of Tanzania are the beginning of HKI's involvement in this effort.

While vocational rehabilitation was HKI's worldwide concern when the agency was founded in 1915, more recent efforts have been directed towards the demonstration of effective ways to reach even the remotest of the world's blind in order to effect quick and inexpensive rehabilitative measures. In the meantime HKI's major attention has been turned to the

prevention of avoidable blindness: firstly the delivery of vitamin A supplementation, and secondly, the integration of an eye care component into basic health care in the developing world. HKI is now engaged in one of the largest blindness problems of all - cataract.

With multiple programmes in over 30 developing nations, the work of HKI is supported by a budget in excess of \$4 million.

Helen Keller International is grateful for opportunities to join with the World Health Organization and with other NGOs in the development and actual delivery of practical programmes that work to restore health and vision and enhance human life.

5.4 International Agency for the Prevention of Blindness (IAPB)

The main feature of the January IAPB Newsletter is that of the Agency's Third General Assembly in New Delhi in December 1986. The Assembly attracted some 400 delegates from 45 countries, and was inaugurated by the Indian Prime Minister, Mr Rajiv Gandhi.

The exposition of blindness prevention activities worldwide by governments and national and international governmental and nongovernmental organizations, presented under the theme "A Decade of Progress", adequately reflected the strength of work and policy in this field.

Significantly, the IAPB Executive Board meetings concentrated on the improvement of regional activities and on ensuring that national and international NGOs were integrated at all levels of its work. The final plenary session of the Assembly passed resolutions for IAPB's regions to conform to those of WHO, on a revised role for its regional and sub-regional chairmen, and on the formulation of a "rolling budget" which all member organizations would be called upon to support. Delegates were unanimous in praising the arrangements made by the Indian Organizing Committee for a highly effective meeting which culminated in the re-election of Dr Carl Kupfer as President of IAPB for the next four years.

5.5 International Eye Foundation (IEF)

The International Eye Foundation is a private, non-profit-making organization dedicated to the prevention and cure of blindness in developing countries. IEF has worked in 60 countries over the last 25 years, and currently maintains programmes in Africa (Ethiopia, Guinea, Kenya, Malawi and Zimbabwe), Latin America (Ecuador, Honduras, Puerto Rico) and the Caribbean (Barbados, Dominican Republic, Grenada, St Kitts/Nevis, St Lucia). Programme expenditure for the financial year 1985-1986 totalled US\$2 million.

Programmes are closely coordinated with ministries of health and vary according to country circumstances; all, however, include a major training component. Every level of health care worker is catered for, from community health workers to ophthalmologists. IEF also produces appropriate teaching aids and provides basic equipment to establish eye care services.

In addition, IEF has carried out epidemiological and operational research in collaboration with academic institutions and other international organizations. Emphasis is also placed on cooperative programmes with other NGOs (e.g., HKI, RCSB) and other voluntary health organizations.

5.6 International Optometric and Optical League (IOOL)

An optometrist is defined by IOOL as a vision-care practitioner with 3-4 years of optometric training. Optometry includes the recognition of signs of eye disease and referral for medical attention; the prescribing of spectacles and other vision aids, and the dispensing and supply of spectacles and vision aids. In some countries, it also includes other aspects of vision care which has been included in the optometric training.

IOOL believes that optometry constitutes an economically sound method of providing these elements of vision care. Optometrists normally function in private practice or in hospital eye departments, in full cooperation with other staff. They are registered or licensed practitioners. IOOL does not believe that unqualified and uncontrolled spectacle sellers are in the long-term interests of any country. It is, however, recognized that a system of self-taught opticians may contribute to providing some optometric services where full optometry is not yet feasible. IOOL believes that training in optometric skills, leading to adequate optometric qualification, is the long-term way of providing better vision care.

IOOL has developed optometric training recommendations and syllabuses from basic skills through technical education to full degree courses. It is willing to find lecturers to provide short courses in optometric skills to promote a high level of vision care. This could be arranged by optometry course organizers who have a broad experience in continuing education. The expenses of these non-profit making organizers would need to be met, but no organization or lecturers' fees would be required.

It is hoped that the above information will result in a more significant level of cooperation between WHO and IOOL in developing better vision care services in those countries where it is inadequate.

5.7 Operation Eyesight Universal (OEU)

Operation Eyesight Universal is a young Canadian NGO involved in sight restoration and blindness prevention programmes in the developing world. Its philosophy is to assist nationals in becoming more effective in helping their own people.

Over 60 partners in a dozen developing countries are being financed by OEU. These teams, through their programmes, treated 1.2 million patients and performed 92 000 sight-restoring operations in 1985.

OEU supports programmes in Bangladesh, Burkina Faso, Dominican Republic, Haiti, India, Kenya, Liberia, Malawi, Nepal, Pakistan, Peru, Sri Lanka and Zambia. Its financial commitments include :

- support to eye hospitals, eye departments in general hospitals and eye clinics;
- financing the capital and operating costs for approximately 40 mobile eye units; (in partnership with RCSB, OEU provides the mobile capacity for Kenya's MOH rural eye care care);
- entering into partnership with an Indian medical college hospital to establish an Institute of Ophthalmology;
- providing funds for the training of ophthalmologists, medical doctors in ophthalmology, ophthalmic auxiliaries and ophthalmic nurses, as well as primary eye health care workers;
- financing over 60 eye camp partners in Bangladesh and India (organized through RCSB);
- assisting integrated community health care programmes with an ophthalmic component;
- funding the capital and operating costs for a paediatric department in a large Indian eye hospital;
- financing programmes for the fight against blinding malnutrition in three areas of India, including the Bombay slums (in conjunction with RCSB);
- underwriting the costs of school screening and treatment programmes.

OEU has joined forces with many national NGOs in the developing world as well as with some government ministries of health. It has also linked up with NGOs in Canada, the Federal Republic of Germany, the United Kingdom and the United States of America. Such team work has led to more effective utilization of resources in serving those in need in the developing world.

5.8 Royal Commonwealth Society for the Blind (RCSB)

RCSB's work in the prevention of blindness and the provision of services for the incurably blind in the developing countries of the Commonwealth and, internationally, in the provision of consultative services, has expanded considerably since the last meeting of the Programme Advisory Group. Total funding of programmes in 33 countries has risen by approximately 60% to \$5.7 million. Commitments to regional and national eye care programmes in 1987 total \$3.5 million, over 20% of which is allocated to training of ophthalmic personnel.

Although the bulk of RCSB's support to blindness prevention activities is in the Asian sub-continent and in Africa, it works jointly with other international NGOs in the Caribbean and in the Western Pacific to develop regional programmes.

Over the past 15 years, RCSB has supported two million cataract operations and 20 million other individual treatments, carried out mainly in Bangladesh and India through the eye camp programme, which last year saw over 200 000 cataract operations in 3239 eye camps.

The fastest growing area of RCSB's work is in Africa where it has a commitment, over a five-year period, to national programmes in the Gambia, Kenya, Malawi, and the United Republic of Tanzania. National programmes are being formulated either singly or in conjunction with other agencies in Botswana, Ghana, Lesotho, Sierra Leone, Swaziland, Uganda, Zambia and Zimbabwe. Zimbabwe is a typical example where RCSB is working with IEF and the Ministry of Health to provide the following services:

- (a) the formulation of a Zimbabwe National Prevention of Blindness Committee;
- (b) the development of a national eye care plan;
- (c) the establishment of a training course for ophthalmic paramedical workers;
- (d) the reorganization and supervision of work at Zimbabwe's main eye hospital, Sekuru Kaguvi.

RCSB's current Five Year Plan is characterized by its long-term commitment to : (a) national programmes, in partnership with other international NGOs; (b) the maintenance of eye camp operations in Asia allied with capital and recurrent funding for all-year round services in rural and urban eye units; (c) the expansion of mobile and fixed units in Africa; and (d) large-scale support to training facilities. The Society has already underwritten the costs of the five-year training of ophthalmic clinical officers for SADCC¹ countries at the Lilongwe School of Health Sciences in Malawi, supported by the British Government's co-funding of \$403 500; preparations are to be completed shortly, in partnership with the Govel Trust in Southern India, for the establishment of an International Centre for Community Ophthalmology and RCSB is pleased to be participating with other NGOs in the work of the WHO Programme for the Prevention of Blindness through the mechanisms of IAPB and the newly formed NGO Consultative Group. The current funding target for RCSB is \$7.5 million.

¹ Southern African Development Cooperative Council

6. PRIORITY DRUGS FOR BLINDNESS PREVENTION

6.1 The essential ophthalmic drugs

The Group took note of the existing list of essential drugs in relation to eye care and prevention of blindness. In general, the participants felt that the present list is good and covers a representative range of ophthalmic drugs. It was, however, noted that there are some limitations in the present list, particularly concerning antimicrobial agents. The Group therefore recommended that this matter receive further consideration in consultation with the appropriate technical WHO programmes. Similarly, it was pointed out that developments in the field of ophthalmic drugs could in the future be considered by the Group, to stimulate the inclusion of appropriate new ophthalmic drugs in lists of essential drugs.

6.2 Local production of eye drops

Commercially available eye drops are very costly for several reasons, e.g., the high cost of the container and labels, and the branding of products. A simple and safe method of local production of eye drops has been developed by one NGO, the essential features of which are :

- re-use of standard vials as containers;
- cheap, disposable pipettes with manual press;
- water prepared by distillation, although even "boiled rain water" is acceptable if the drop is not to be used on the open eyeball;
- sterilization by using a simple water bath (some drops may be autoclaved);
- oxidation by heat minimized by use of an "anti-oxidation agent", such as sodium metabisulphite;
- sterility and preservation assured by the use of "antiseptic preservatives", i.e., benzalkonium chloride and phenylmercuric nitrate.

By this simplified method, drops can be produced at 10% of the commercial cost. The fact that the method is simple means that drops can be produced in a rural setting and thus be widely available. A schematic representation of the main steps in the preparation of eye drops is being elaborated at a poster. Full details and lists of (i) raw materials, (ii) equipment, (iii) suppliers, and (iv) methods of preparation of each drop, are available on request through CBM.¹ The approximate costs for setting up a local production unit are :

Raw materials (sufficient for 1-2 years)	US\$ 2000 approximately
All equipment including still, balance portable autoclave, glassware filtration unit and hand press	US\$ 3000 approximately
Disposable pipettes	US\$ 70 per 1000

There are today more than 20 locations in Africa where the local production of eye drops has been implemented and where short training courses can be arranged.

The participants expressed a strong interest in the possible local production of eye drops, as it was generally felt that the cost of eye medications is often a major expenditure in many blindness prevention programmes. The potential for dramatically reducing the cost of topical eye medication was recognized, and similarly the increased availability of eye medications that local production would make possible.

¹ CBM Africa Region Ophthalmic Consultant, Moshi, United Republic of Tanzania

When discussing some of the technical aspects, such as antiseptic preservatives, the setting-up of a workshop and the level of production, it was agreed that there was a need to establish more formal guidelines. It was, therefore, recommended that the PBL Programme convene a working group to prepare appropriate guidelines for local production of eye medications.

7. DEVELOPMENT OF TEACHING/EDUCATIONAL MATERIAL FOR BLINDNESS PREVENTION

The participants took note of the ongoing collaboration between the PBL Programme and NGOs in relation to the development of teaching aids. The poster on primary eye care previously developed together with IEF had been a great success, and was still, four years later, in strong demand in all parts of the world. It was noted that the poster was available in nine languages, and that more than 60 000 copies had been disseminated.

Another ongoing development of teaching aids and educational material is being pursued between the PBL Programme and HKI in respect of three new posters. One of these posters relates directly to basic primary eye care skills, whereas the other two would focus on cataract and the general promotion of eye health. These posters are presently being field tested and should become available during 1988. The printing and dissemination of these new posters will, as previously, be supported by funds received from the Japan Shipbuilding Industry Foundation through the Sasakawa Health Trust Fund.

It was pointed out that there is still a serious shortage of good quality educational material and training aids for non-specialist personnel expected to provide eye care. The lack of good training material often hampers the development of training programmes for various categories of auxiliary personnel. The value and potential use of new printing techniques, using transparencies in book form, was noted by the Group members, who recommended that attention should be paid to the development and dissemination of such material. It appeared that some WHO Collaborating Centres for the Prevention of Blindness might be interested in this matter, and that a working group or similar forum could look into the most needed and appropriate material.

8. DATE AND PLACE OF NEXT MEETING

The Group took note that an invitation had already been extended to the WHO Secretariat after the previous meeting to hold the 1989 meeting of the WHO Programme Advisory Group on the Prevention of Blindness at the WHO Collaborating Centre for the Prevention of Blindness and the International Center for Epidemiologic and Preventive Ophthalmology (ICEPO), Johns Hopkins, Baltimore, USA. The convening of this Programme Advisory Group at ICEPO could thus form part of the events planned for the celebration of the 200th Anniversary of the Johns Hopkins Medical School.

CONCLUSIONS AND RECOMMENDATIONS

1. The Group noted with satisfaction the continuing growth and development of the PBL Programme :

- in the number of countries with active national programmes, at present 50;
- in the increasing global, regional and national programme activities, and those of concerned nongovernmental organizations and WHO Collaborating Centres for the Prevention of Blindness. In particular, formalization of the NGO Consultative Group provides an effective mechanism for increasing collaboration between NGOs and for improving coordination with the PBL Programme, a process further enhanced by reorganization of the regional framework of International Agency for the Prevention of Blindness to reflect that of WHO.

In addition it was noted that much progress had been made in addressing recommendations of the Sixth Meeting of the WHO Programme Advisory Group on the Prevention of Blindness held in 1985, namely :

- the convening of working groups on essential eye surgery and on the provision of spectacles at low-cost;
 - the continued collection of data on blindness and its causes, particularly from population-based surveys;
 - the holding of a regional task force in Africa to address common approaches to blindness prevention, and the forthcoming PAHO Technical Advisory Committee meeting to be held in March 1987 in the Dominican Republic;
 - support for training of national managers for blindness prevention programmes;
 - the development of national and subregional training centres for various levels of personnel providing eye care, particularly in the African and South-East Asia regions; and
 - increased attention paid, at the global and regional levels, to the prevention of blindness from leprosy.
2. The Group reiterated the other recommendations made at the last meeting, in particular :
- the urgency for strengthening both global and regional programme staff to allow for further growth of the Programme;
 - the ever-persistent need for additional resources to support the development and accelerated growth of national and regional programmes;
 - the continuing need to establish appropriate incentives and career structures to encourage health personnel to pursue careers in community ophthalmology and to provide services in underserved, usually rural, communities; and
 - the need to include vitamin A for mothers and newborn in the basic MCH delivery kit in areas where vitamin A deficiency is a problem.

The Group considered the following new issues :

3. The Group emphasized that the primary target of the PBL Programme is to reduce blindness rates in every country to below 0.5% overall. This has already been accomplished in most developed countries, and the main thrust of the Programme should, therefore be focused on activities in developing countries.
4. The conclusion of the Sixth Meeting of the WHO Programme Advisory Group on the Prevention of Blindness that "Africa remains a priority area for blindness prevention" was reaffirmed, especially in the light of the deteriorating economic conditions on that continent which are retarding the development of blindness prevention activities. It is recommended that the PBL Programme, NGOs and other agencies pay particular attention to the mobilization of all possible resources to foster blindness prevention programmes in Africa.
5. There is growing awareness that cataract is the leading cause of blindness worldwide. The Group appreciated that this had been addressed in an interregional meeting on the management of cataract within primary health care systems. While fully endorsing the report, it was recommended that further resources be mobilized and activities intensified to address this global problem. The Group supports measures to provide shorter training schemes for cataract surgery in countries where such skills are sparse and cataract blindness common. Furthermore, the Group considers it necessary to monitor the efficiency and safety of such training schemes.

6. The participants greatly appreciated the presence of all WHO Regional Advisers responsible for PBL activities, and emphasized the importance of their presence at future meetings, so as to facilitate planning and coordination of activities at all levels, through interaction with NGOs and other related groups at these meetings.
7. The Group welcomed the formalization of the Consultative Group of NGOs to the PBL Programme and requests it to report on its deliberations at the meetings of the WHO Programme Advisory Group on the Prevention of Blindness and to participate actively in future meetings of the Advisory Group.
8. The Global Data Bank has proved to be a useful tool for the collection and dissemination of information on trends in prevalences and causes of blindness. While the continued collection of national statistics on blindness is useful for updating the existing data bank, there is a need for a formal review of existing data, with a view to obtaining more reliable regional estimates of blindness rates by cause.
9. It was noted that a new simplified trachoma grading scheme had been developed and field-tested for use by auxiliary health personnel at the community level. Similarly, a new technique for the early detection of vitamin A deficiency will shortly become available. Further experience in the application of these techniques by collaborating groups should be encouraged.
10. Infectious eye diseases still constitute an important cause of visual loss in many developing countries. It was therefore recommended that an interregional meeting should be convened to formulate appropriate primary health care strategies to address this problem.
11. The Group noted with interest the experience in some countries indicating a growing ability and willingness of local communities to support the cost of primary eye care activities. It is recommended that the possibilities for developing indigenous, extragovernmental resources should be explored in other countries.
12. The cost of commercially available common eye medications constitutes a major item of expenditure in blindness prevention programmes. The Group took note of and was impressed with the potential for increasing the availability of topical eye medications through local production. It urged that a working group be convened to prepare appropriate guidelines for local production.
13. It was noted that there are limitations in the existing list of essential drugs, especially in relation to antimicrobial agents, and recommended that this receive appropriate consideration.
14. Experience obtained in several countries has demonstrated that the credibility and acceptance of promotive and preventive services as part of primary eye care are enhanced when combined with curative services and effective referral of patients. It is therefore recommended that more emphasis be given to this aspect in programming at the national level.
15. In the course of development of national blindness prevention programmes, it has become increasingly recognized that managerial skills are an important and often overlooked requirement for effective programme function. It is therefore recommended that training in managerial skills be more actively promoted and supported at all levels, including those of auxiliary and non-specialist personnel.
16. Given the problems of limited resources and existing impediments to programme implementation in many countries, greater attention needs to be given to operations research as a means of maximizing programme efficiency and effectiveness.

17. There is an increasing number of training programmes for auxiliary personnel providing eye care being established at a subregional and intercountry level. It is recommended that the PBL Programme periodically review these training programmes and officially recognize those meeting appropriate standards.
18. Present training programmes, especially for non-specialist eye care personnel, are hampered by the lack of appropriate, well-illustrated, durable educational material, particularly on major causes of blindness. A Working Group, involving Collaborating Centres inter alia, should be convened to establish modules and priorities for development of appropriate teaching materials, such as mass-produced transparencies.
19. Because persons being trained in medicine and in public health do not ordinarily recognize the importance and potential of integrateing preventive eye care services, it is important to promote the inclusion of PBL concepts within general public health training programmes as well as in general medical school curricula.
20. The Group recommends that IAPB continue its process of cataloguing NGO activities, and to provide these in as much detail as possible to the WHO Regional Offices.
21. WHO welcomes the provision of eye care services to understaffed areas, but encourages, wherever possible, the priority of training and development of indigenous capabilities.
22. In order to improve their ability to respond effectively to country requests, it was recommended that WHO Regional Offices be supplied with a directory of WHO Collaborating Centres describing their profile in terms of training and research in relation to blindness prevention.
23. Given the general need for public health and managerial skills which are essential to the design and implementation of national blindness prevention programmes, and the role of senior managers and project directors in the supervision and integration of activities of trained junior staff, and in view of the limited time available for such training, it is recommended that an appropriate curriculum and training material be developed and tested for a 2- to 4-week course to meet these needs. Existing material developed by other WHO Programmes (e.g., EPI) should be utilized, where relevant.

Message from

DR HUSSEIN A. GEZAIRY

Regional Director, WHO Region for the Eastern Mediterranean
on the occasion of the

SEVENTH MEETING OF THE WHO PROGRAMME ADVISORY GROUP
ON THE PREVENTION OF BLINDNESS

Regional Office, Alexandria, 16-19 March 1987

Ladies and Gentlemen, dear Colleagues,

It gives me great pleasure to welcome you to this Seventh Meeting of the Programme Advisory Group on the Prevention of Blindness, which is meeting for the first time in the Eastern Mediterranean Region.

The chance to hold some of its meetings in different regions of WHO has enabled the Group, in addition to its consideration of global matters, to gain first-hand knowledge about individual country and regional problems. In their turn, the regions also benefit. I see this meeting as providing my staff with the opportunity to learn about the latest developments in this field, while the comments and suggestions you will be making in the course of your review of regional activities will enable us to see our problems in a new light, thereby assisting us in finding solutions.

For the benefit of the new participants, to whom I extend a special welcome, it might be worth recalling that the WHO Programme Advisory Group on the Prevention of Blindness was established in 1978; its terms of reference were to advise WHO on programme development, and to participate in the promotion of blindness prevention and in the mobilization of much needed resources. The work of the Group has been recognized as having practical relevance to problems at country, regional and global levels, since its recommendations have always been tempered by realism and guided by dedication. The close collaboration with and active participation of nongovernmental organizations has played a major role in the Group's successes.

You will, I believe, all be aware that two of the objectives of the WHO Programme are to reduce avoidable blindness in developing countries to the lowest possible level and to ensure that basic eye care is provided to all populations. In this context, it is usually considered that an overall blindness rate in a country of more than 0.5%, or a rate of 1% in any individual community, indicates that there is a health problem that involves "avoidable blindness". Most developing countries show considerably higher blindness rates. The Eastern Mediterranean Region, which comprises developing countries, has an overall blindness rate of approximately 3%. With a present population of some 320 million, this means that the Region has some 9.6 million blind people of whom 8 million need not have been blind. The impact on the Member States of this Region in terms of socioeconomic loss and human suffering is incalculable.

It is clear that the scale of avoidable blindness makes it a public health problem of great importance in the Region, and places considerable demands on the national health services. While the epidemiology and prevalence vary from country to country, at least one of the four major causes of avoidable blindness - trachoma, cataract, onchocerciasis and xerophthalmia - is present in each country of the Region.

Starting in the 1950s, trachoma control programmes have been introduced in more and more countries of the Region until most are now covered. There are encouraging indications that the disease is being brought under control, with national efforts being aided by socio-economic progress and changes in the lifestyles of populations.

In the case of cataract, however, it is probable that there is an increasing backlog of unoperated cases in many countries, resulting from the growing proportion of the elderly in populations and the inability of the existing health services to keep pace with the rising number of cases requiring surgery. Carefully conducted epidemiological studies in Saudi Arabia and Tunisia have shown that, in those countries, cataract is now by far the most important cause of avoidable blindness, being responsible for more than 50% of the cases. Since onchocerciasis and xerophthalmia pose more localized problems, it can be concluded that blindness due to cataract and, decreasingly, to trachoma will be the major challenges facing efforts to eliminate avoidable blindness in the Region on our way to achieving our common goal of Health for All by the Year 2000.

The development of a primary health care approach to the prevention of blindness has, over the last few years, been one of the major achievements of the WHO Programme in its cooperation with Member States. Schemes for the provision of "primary eye care" as a part of primary health care services are now being implemented in a rapidly increasing number of countries. While the components of primary eye care programmes will vary, reflecting locally common eye diseases, the available resources and personnel, and the general development of the health services, the main features are remarkably constant.

In the Eastern Mediterranean Region, the concept of primary eye care is gaining more and more ground, and the Regional Office is placing particular emphasis on its development. Indeed, this was the subject of a Regional meeting held in Tunisia in December 1985. Copies of the report are being made available¹.

Overall, our efforts in the Region are very much in concord with the target of the WHO Programme, namely to have national blindness prevention programmes effectively established in 60 developing countries throughout the world by 1989. It is very encouraging to note that there are 50 such programmes already established, of which ten are in the Eastern Mediterranean Region alone; I am pleased to inform you that several others are being developed.

Two WHO Collaborating Centres for the Prevention of Blindness have been identified, one in Saudi Arabia and one in Tunisia. These Centres provide technical and managerial leadership, as well as facilities for training personnel in ophthalmology and prevention of blindness. Both Centres have also played a very important role in the epidemiological assessment of blindness I referred to earlier, especially with regard to determining its causes in their respective countries. The Regional Office is also supporting national efforts to undertake similar assessments in other countries of the Region; in view of the considerable differences between countries with regard to visual loss and ocular morbidity, such assessments provide the only basis for proper programme development at country level.

I mentioned nongovernmental organizations as partners in the WHO programme. Indeed, several major international nongovernmental organizations are already spending some US\$ 25 million on blindness prevention programmes worldwide. The input of such organizations to the international programme is of great importance, not only with regard to availability of resources, but also in respect of the experience and close community involvement that such organizations have often built up in this field. Following the Technical Discussions of the World Health Assembly in 1985, which focused on collaboration with nongovernmental organizations, the President of the International Agency for the Prevention of Blindness and the Director-General of the Organization agreed proposals for the establishment of a Consultative Group of Nongovernmental Organizations to the WHO Programme on the Prevention of Blindness and its membership. It met for the first time in May 1986. The group supports regular interaction with the WHO Programme, and has highlighted the importance of developing and strengthening collaboration at regional and country levels. Copies of the report of its first meeting are available for your perusal.

¹ Document WHO-EM/PBL/33-E

The Consultative Group took note of the venue of the present meeting, and I am very pleased to see the representatives of so many nongovernmental organizations present here today.

Looking into the immediate future, it seems likely that the target of having 60 developing countries with national prevention of blindness programmes by 1989 will be met, and it is certainly high time to consider what happens after this date. Within the membership of WHO, there are at present some 125 Member States that are classified as developing countries. It seems reasonable to set a new, interim target - on the way to achieving 100% success at global level by the year 2000.

Furthermore, efforts must surely be directed at ensuring that the various national programmes are given every possible support, including providing up-to-date information on health services research that has uncovered information of importance to the programme, for example regarding the public acceptance of programmes as delivered at present or on how community participation can help to bring success despite a lack of human and financial resources. In this field, too, there is a need for selection of those technologies that are truly "appropriate" for use at the different levels of primary health care, since technical support ranging from spectacles to microsurgical appliances needs to be evaluated in terms of economic and technical feasibility.

It might be worth considering in which way, perhaps at regional level, one could provide a vehicle for providing a continuing and informal source of information and ideas. I am sure this would help to ensure that all the participants in this Programme feel that they belong to one team and that they do not stand alone with their particular problems.

In this context, it might also be useful to discuss ways of enabling selected managers and supervisors to communicate directly with WHO on matters of immediate concern to them, also on an informal basis. This would certainly be useful to WHO, by providing the type of feedback from the implementation level that it requires to ensure that the Programme has high relevance; furthermore, it could also improve the effectiveness of its response.

Finally, it might be worth considering how one could mobilize the ophthalmic community throughout the world to provide support for the Programme, for this is another type of community participation that I believe must be tapped as a source of highly-relevant assistance.

I wish you every success in your deliberations; I am sure that the recommendations and the plan of action for the coming years that will be a major outcome of this meeting will enable us to look to the year 2000 with greater confidence.

SEVENTH MEETING OF THE WHO PROGRAMME ADVISORY
GROUP ON THE PREVENTION OF BLINDNESS

Alexandria, 16-19 March 1987

AGENDA

Opening of the Meeting
Election of Officers
Adoption of the Agenda

1. Review of programme development :
 - (a) at the global level
 - (b) in the Regions
2. Brief review of recent programme documentation
3. Activities of the WHO Collaborating Centres for the Prevention of Blindness
4. Training of personnel in eye care :
 - TCDC developments
 - recognition of courses
5. Collaboration with nongovernmental organizations
6. Priority drugs for blindness prevention :
 - the essential ophthalmic drugs
 - local production of eye drops
7. Development of teaching/educational material for blindness prevention
8. Any other matters

Conclusions and Recommendations
Date and Place of next meeting
Closure of the meeting

VII MEETING OF THE WHO PROGRAMME ADVISORY GROUP
ON THE PREVENTION OF BLINDNESS

Alexandria, 16-19 March 1987

LIST OF PARTICIPANTS

MEMBERS OF THE ADVISORY GROUP

- Dr Ihsan Badr, Deputy Medical Director, King Khaled Eye Specialist Hospital, P.O. Box 7191, Riyadh - 11462, Saudi Arabia
- Dr Hannah Faal, Coordinator, Gambia National Eye Plan, Eye Unit, Royal Victoria Hospital, Independence Drive, Banjul, The Gambia
- Dr Stella Basurto de Garcia, Director, School for Blind and Deaf Children, P.O. Box 7685, Cali, Colombia
- Dr Hu Tian-Sheng, Deputy Chief, Department of Ophthalmology, Peking Union Medical College Hospital, Beijing, People's Republic of China
- Professor Madan Mohan, Chief Organiser/Professor of Ophthalmology, Dr Rajendra Prasad Centre for Ophthalmic Sciences, All-India Institute of Medical Sciences, Ansari Nagar, New Delhi - 110016, India
- Dr R.P. Pokhrel, Head, Eye Department, Bir Hospital, Kathmandu, Nepal
- Dr Salvador R. Salceda, Integrated Health Care Services, Inc., 3rd Floor, Medico Building, San Miguel Avenue, Cor. Lourdes Road, Pasig, Manila, Philippines
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- Dr Nicolas Toufic, Head, Department of Ophthalmology, Central Hospital and Jamot Annex, B.P. 1616, Yaoundé, Republic of Cameroon
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REPRESENTATIVES OF INTERNATIONAL NONGOVERNMENTAL ORGANIZATIONS

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- Foresight : Ms D.B. White, Chandler Highway, P.O. Box 162, Kew 3101, Victoria, Australia
- Helen Keller International Inc. : Mr John Palmer III, Executive Director, 15 West Sixteenth Street, New York, N.Y. 10011, USA

* Unable to attend.

International Agency for the Prevention of Blindness : Mr Alan Johns (see below, under RCSB)

International Eye Foundation : Mr J.R. Babson, Executive Director & President, 7801 Norfolk Avenue, Bethesda, Maryland 20814, USA

International Federation of Ophthalmological Societies : Professor Mohyl El Din Said (see Secretariat)

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REPORTS OF THE WHO COLLABORATING CENTRES FOR THE PREVENTION OF BLINDNESS

AFRICAN INSTITUTE OF TROPICAL OPHTHALMOLOGY
Bamako, Mali

Director : Dr P. Vingtain

1. TRAINING ACTIVITIES

1.1 Certificate of Special Studies (CES) in Ophthalmology

Three physicians who obtained the diploma were posted to outlying hospitals. Four other physicians are taking the same course at this time.

1.2 Ophthalmological Nursing Diploma

Nineteen candidates nominated by the OCCGE Member States were awarded the diploma in 1985. A new course for 23 trainees began in October 1985; the training lasts for two years.

1.3 Other training courses

During the period 1985/1986, 29 medical students of the Mali National School of Medicine and Pharmacy took a six-week course. In addition, 29 pupil nurses of the health high school took a four-week course, and five general practitioners stayed for periods of between 8 and 12 weeks at the Institute to acquaint themselves with ophthalmological techniques.

2. RESEARCH ACTIVITIES

2.1 Onchocerciasis

The research consisted essentially of therapeutic trials.

(i) A double-blind test undertaken in the Koulikoro Region (Mali), in which MK 933 (ivermectin) was compared with diethylcarbamazine and a placebo.

(ii) The Mali National School of Medicine and Pharmacy and IOTA studied the effects of the general distribution of ivermectin in a community on vector transmission.

(iii) A study on 230 patients was undertaken at Nogueva (Mali) to establish the direct effects and the side effects of MK 933 in large-scale treatment.

(iv) The elimination of MK 933 in breastmilk was studied in 1986.

(v) A tableted form of ivermectin was tested on 80 patients.

2.2 Epidemiology and prevention of blindness

The Yeelen operation and IOTA conducted two descriptive surveys to establish the prevalence of the main blinding conditions in the countryside, and two surveys on eye disease among schoolchildren. Four doctorate theses in medicine were submitted.

A village guide to eye health accompanied by an instructor's guide, produced in collaboration with the national literacy services, was published by the Organization for the Prevention of Blindness.

2.3 Basic research

IOTA took part in a study along with various scientific partners on retinal autoantigen and onchocercal antigen sensitization as a factor determining onchocercal chorioretinitis.

2.4 Applied research

A review of orbital-ocular tumours as encountered in the Republic of Mali was submitted on the basis of experience over the last 10 years.

Autotransplants are the subject of a research programme connected with surgery of the pterygium.

Lastly, a study of bacterial, viral and chlamydial forms of conjunctivitis has been undertaken in collaboration with French research institutes.

3. CLINICAL ACTIVITIES

The clinical activities of the years 1985 and 1986 are summarized in Table 1 (the data for the Yeelen operation for 1986 are not yet available).

TABLE 1. ACTIVITIES OF IOTA AND THE YEELEN OPERATION - 1985/1986

	1985	1986 (first 10 months)
IOTA		
Consultations	59 196	42 700
Patients admitted to hospital	2 195	1 631
Surgery	944	712
of which, cataract	613	593
YEELEN		
Consultations	201 399	-
Villages visited	323	-
Surgical acts	3 145	-
of which, trichiasis	1 738	-
cataract	845	-

INTERNATIONAL CENTER FOR EPIDEMIOLOGIC AND PREVENTIVE OPHTHALMOLOGY
Dana Center, Wilmer Institute, Johns Hopkins Hospital
Baltimore, Maryland, USA

Director : Professor Alfred Sommer

During the past two years, the WHO Collaborating Centre for the Prevention of Blindness in Baltimore (International Center for Epidemiologic and Preventive Ophthalmology (ICEPO)/Dana Center for Preventive Ophthalmology, Wilmer Institute, Johns Hopkins Medical Institutions) has continued research and technical support activities in the areas of public health and preventive ophthalmology.

Xerophthalmia

One of the major activities of the Centre has involved research and technical service in the control of vitamin A deficiency and xerophthalmia. Results from the large Indonesian study on the impact of vitamin A supplementation on systemic morbidity, mortality and ocular disease are being released and some already published. A larger, similar trial is underway in the Philippines. Further studies have been undertaken in both humans and animal models using impression cytology for the detection of early vitamin A deficiency. Technical assistance, especially training in imprint techniques, is being scheduled for regional seminars in Asia, Africa and Latin America. A vitamin A/xerophthalmia recognition and treatment card has been distributed for generic use in Asia, with an African version to be completed early in 1987.

Trachoma

Field work and laboratory studies continue in this second major focus of activities of the Centre. An epidemiological evaluation of risk factors in the development of inflammatory and blinding trachoma has been carried out in the United Republic of Tanzania. At the same time, laboratory studies on a nonhuman primate model of trachoma have yielded important insight into the immunology of the disease, with work underway towards the development and testing of possible chlamydia vaccines. Preliminary results are limited but encouraging.

Onchocerciasis

This third major area of investigation, funded to a large part by the World Health Organization, has completed initial testing of ivermectin and demonstrated both its efficacy and safety for the treatment of onchocerciasis. A new phase of research is now getting underway, looking at long-term results and the value and impact of repeated dosing on transmission, longevity of macrofilaria, and associated factors.

Other Areas

Research continues on the relationship between cataract and ultraviolet exposure. Field work, carried out over the past two years, is now completed and the study is undergoing analysis. Work continues on the epidemiology of open angle glaucoma, and the value and effectiveness of early screening parameters, especially nerve fibre layer assessment and computerized automated perimetry. A portable Yag laser has been developed and field tested for use in third world countries to control angle closure glaucoma.

Training

In addition to technical assistance and training activities as indicated above, ICEPO has a regular complement of research fellows who train in epidemiological and public health techniques as applied to ocular disease in the prevention of blindness. The Master's Degree Program in Preventive Ophthalmology, last given two years ago, will be repeated during the 1987/1988 academic year. Funding is being sought for this activity. Applications are being

sought and received. A class of fourteen individuals is expected. ICEPO staff have travelled to Africa, Asia, the Middle East and Latin America to provide technical assistance for the initiation, development and evaluation of blindness prevention activities and to hold workshops and relevant courses and seminars.

Future Activities

It is expected that the present areas of concentration will continue during the coming two years.

FRANCIS I. PROCTOR FOUNDATION FOR RESEARCH IN OPHTHALMOLOGY
University of California, San Francisco, USA

Director : Dr C.R. Dawson

1. PROGRAMME ACTIVITIES

1.1 Risk factors for trachoma: Long-term follow-up in Tunisia

A long-term follow-up study of trachoma was conducted in Tunisia to elucidate clinical and socio-environmental risk factors for severe cicatricial disease. This is a joint project with l'Institut d'Ophtalmologie de Tunis (Director: Professor M.T. Daghfous).

Between 1969 and 1972 a longitudinal study of the epidemiology and the natural history of trachoma was carried out in Tunisia. Since that survey, economic conditions in the region have improved steadily. A school survey conducted in February 1986 revealed less than 7% of first graders with severe intensity trachoma.

The aim of the present study was to test two hypotheses on the development of scarring in trachoma. Drawing from data gathered in 1969-70, a random sample was selected in two villages among persons who were 10 years old or less at the first examination. A total of 151 and 146 individuals were re-examined in the respective villages.

Differences between the two villages and development of disabling sequelae were striking. Cardinal clinical signs with the highest correlations to severe scarring were follicle maturity and conjunctival scarring. Some composite clinical signs which were highly correlated with later scarring included a measure combining follicles and follicle maturity. Trachoma intensity and stage showed some correlation with later scarring.

In the second phase the age group examined consisted of 94 persons who were 10 to 30 years old at the 1969-1972 examinations, and many already had a substantial degree of conjunctival scarring. This group was examined to measure the risk of intumed eyelids and corneal scarring following the decline in infectious trachoma in later childhood. None of those with no scarring or a mild degree of scarring went on to develop intumed lashes. Thus this damaging lesion appears to be a direct result of the conjunctival damage from trachoma which develops over time.

1.2 Behaviour and trachoma in Egypt - a study using medical anthropology

In December 1985 and January 1986 a group from the Proctor Foundation and the University of Alexandria carried out a detailed study of trachoma and health-related behaviour in the village of Sednawi al Wosta. In each of 27 households the medical anthropologist observed the environmental and daily activities in each household that might relate to health, including water source, defecation and waste disposal, washing, food preparation, etc. A

follow-up of these same households was conducted in October 1986 to determine the prevalence of trachoma and other eye infections during hot weather when epidemic conjunctivitis is more common in Egypt.

In Sednawi al Wosta the prevalence of active trachoma in children under 10 years was 40% in winter and 60% in October 1986. The disease was very unevenly distributed in households.

The analysis of behavioural variables and trachoma compared household trachoma intensity with behaviour and beliefs that have been anecdotally mentioned as contributing to the spread of trachoma infection. The following activities in each household were observed for one full day: face-washing; face-wiping; hand-washing; child care; bathing; defecation behaviour; contact with faeces; location of animals; number of people per bed; sanitation; food storage; flies; location of cooking area; finger-to-eye and clothing-to-eye contact; eye irritants: smoke, dust, dirt, kohl; water storage; water contact; water disposal; rationing of water; latrines.

Of the behaviour variables the one most strongly associated with low trachoma infection was face-washing of children. Socioeconomic status, education of parents, girls, and boys were not associated with face-washing.

The variables that were not associated with trachoma intensity score were found to be:

Socioeconomic status

Education of girls, boys or adults

Number of people per bed

Sanitation, including disposal of faeces, faecal contamination, etc., clean water, reusing of water, how often the people fetched water.

1.3 Second phase field studies on epidemiology of trachoma and the influence of behaviour

In order to confirm our observations on the influence of daily behaviour on the intensity and severity of trachoma in individuals and in households, we carried out a second survey of Sednawi el Kobra, a village adjacent to the one studied previously by our group. The results reveal that this village still has a substantial prevalence of active trachoma.

Surprisingly, women have much more moderate and severe scarring (47%) than men (36%), despite the lower rate of inflammatory disease. Similarly, intumed lids occur more frequently among women (5.4%) than among men (2.4%). This disease also leads to a substantial count of blindness and visual loss.

1.4 A computer programme to provide expertise on primary eye care for frontline health workers

Under a separate USAID grant, the Centre is developing a programme to provide expert advice on the management of eye problems to health care providers in rural clinics. The programme will be made available in a battery-operated lap-top type microcomputer. The programme acts as an expert consultant. The user, a health care worker, is asked a series of questions about a specific patient and responds by giving a case summary and then recommendations for management.

The programme is being tested in two rural health centres in Tunisia and in Egypt, where the programme has been reviewed and analysed by the University of Alexandria. The programme is being developed in English, but will be implemented in Arabic. It is now available for IBM-PC type computers but English and Arabic versions are being developed for the Apple MacIntosh.

NATIONAL EYE INSTITUTE, NATIONAL INSTITUTES OF HEALTH
Bethesda, Maryland, USA

Director : Dr Carl Kupfer

INTRODUCTION

The specific objectives of the National Eye Institute's international activities are:

- evaluating available health technologies, promoting the most cost-effective intervention and prevention programmes, especially in developing countries;
- conducting collaborative, applied research studies aimed at developing preventive methods for dealing with specific eye diseases;
- conducting controlled clinical evaluations of research findings; and
- exchanging information on recent scientific advances and their appropriate application to blindness and visual problems.

1. SUMMARY OF INTERNATIONAL PROGRAMMES AND ACTIVITIES

China

The Director of the Zhongshan Ophthalmic Centre, Zhongshan Medical College, visited the National Eye Institute in April 1986 to develop further a collaborative programme. Scientists from the Peking Union Medical College are being trained by the National Eye Institute, and a joint research project on the prevalence of cataract and maculopathy in Tibet is being planned.

India

A Clinical Research Centre for the Prevention of Nutritional Blindness has been established in collaboration with the National Institute of Nutrition in Hyderabad, India. A community-based study of measles, ocular disease, and vitamin A status was completed and the risk factors for xerophthalmia are being studied.

Keratomalacia is an irreversible consequence of severe vitamin A deficiency combined with other factors. A study that has the objective of determining the role of collagenase in this disease is nearing completion, and a clinical study of absorption of vitamin A from oral rehydration solutions during the acute phase of diarrhoea has been completed.

The National Eye Institute and the Indian Council of Medical Research have developed a collaborative programme of blindness research under the 1983 Indo-US Science and Technology Initiative. In addition to the above, this initiative includes projects to reduce blindness from cataract and Eales' disease.

A hospital-based case-control study of risk factors for aging-related cataract, with special emphasis on nutrition and blood biochemistry, is being conducted at the Dr Rajendra Prasad Centre for Ophthalmic Sciences, New Delhi.

An operational research study to reduce barriers to cataract surgery is being conducted in Madurai in collaboration with the Aravind Eye Hospital and the University of Michigan.

A study on acquisition and allocation of brunescient and other cataracts is being conducted by Oakland University in collaboration with ophthalmic surgeons and biochemists in India. An arrangement has been made to collaborate in studies on the lenses available in India using biochemical, biophysical and other techniques.

Italy

A genetic study of retinitis pigmentosa, which is particularly prevalent in Sardinia, and a case-control study of risk factors in aging-related cataract are being planned.

Japan

The National Eye Institute and the Japan Society for the Promotion of Science have agreed to exchange two scientists from each country annually to conduct joint research.

Latin America

Two demonstration projects to create cataract-free zones have begun in Latin America, one each in Peru and Brazil.

International and Multinational Organizations

A meeting sponsored by The Pan American Association of Ophthalmology (PAAO), the National Eye Institute, and the National Institutes of Health Fogarty International Center was held in April 1986 to discuss the concept of "cataract-free zones". Prominent Latin American ophthalmologists, officials of PAAO, staff of Helen Keller International, and experts in operational research and cataract intervention programmes attended. Proposals were prepared for two demonstration projects in Brazil and Peru.

In June 1986 the National Eye Institute, jointly with Helen Keller International, sponsored a three-day international meeting of experts to discuss approaches to reducing the worldwide cataract problem. Research approaches were published in a sixty-page monograph, "To Restore Sight, the Global Conquest of Cataract Blindness".

2. EXTRAMURAL PROGRAMMES

Last year, the National Eye Institute made 23 awards to foreign institutions in 9 countries.

3. INTRAMURAL PROGRAMMES AND ACTIVITIES

The National Eye Institute continues to serve as an international centre for research and training in eye disease. Over the past year, 27 Visiting Fellows, 10 Visiting Scientists, 10 Visiting Associates, and 21 Guest Researchers and other investigators from 20 countries conducted research studies at the Institute.

INSTITUTO NACIONAL DE CIENCIAS NEUROLOGICAS Y OFTALMOLOGICAS
Lima, Peru,

Director : Dr Francisco Contreras

This institute has four types of activities related to blindness prevention: epidemiological research; training of personnel; blindness prevention activities and provision of eye health care services; and, equipment and implementation of the rural and peripheral services of the Ministry of Health. These activities have been developed in five geographical areas of the country.

1. EPIDEMIOLOGICAL RESEARCH

With the sponsorship of the World Health Organization, a survey on blindness prevalence in "Pueblos Jovenes" of the southern cone of Lima (coastal region) was carried out. The

results of this investigation were significantly different as compared to those of the previous survey in Puno (Andean region).

2. TRAINING OF PERSONNEL

Training courses have been given for primary school teachers, factory health aides, nurses and general practitioners of health posts and rural hospitals. Up to October 1986, the following personnel had been trained:

	GENERAL PRACTITIONERS	NURSES	HEALTH AIDES	SCHOOL TEACHERS	FACTORY HEALTH AIDES
1985	57	33	144	402	80
1986	20	31	55	178	
TOTAL	77	64	199	580	80

3. BLINDNESS PREVENTION ACTIVITIES - PROVISION OF EYE HEALTH CARE SERVICES

These activities have been developed according to the pyramid levels of care of each of the health regions, by the Ophthalmological Center and the trained personnel. The number of treated cases were:

IN HEALTH POSTS

	SCREENING OF VISUAL ACUITY	PREVENTION OF CONJUNCTIVITIS IN THE NEWBORN	CATARACT DIAGNOSIS	OTHER ACTIVITIES	REFERRALS TO OTHER LEVELS
1985	17330	3402	590	6790	441
1986	8965	1891	140	3794	128
TOTAL	26295	5293	730	10584	569

IN HEALTH CENTRES AND RURAL HOSPITALS

	SCREENING OF VISUAL ACUITY	PREVENTION OF CONJUNCTIVITIS	CATARACT DIAGNOSIS	MINOR SURGERY	REFERRALS
1985	7936	1189	256	6679	364
1986	1845	570	133	3662	168
TOTAL	9781	1759	389	10341	532

IN REGIONAL HOSPITALS

	OPHTHALMOLOGY CONSULTATION	MAJOR SURGERY	MINOR SURGERY	REFERRALS
1985	4157	360	208	16
1986	6785	172	193	24
TOTAL	10942	532	401	40

With regard to more specialized eye care, a total of 7 456 patients came for consultation. The principal causes are given below:

Ametropia	2043 cases	27.4%
Conjunctivitis	850 "	11.4%
Pterygium	619 "	8.3%
Cataract	559 "	7.5%
Corneal Leucoma	164 "	2.2%
Strabismus	156 "	2.1%
Glaucoma	150 "	2.0%
Corneal Ulcer	142 "	1.9%
All others	2773 "	37.2%

The highly satisfactory results of the campaign to prevent conjunctivitis in the newborn have been an outstanding achievement since 1985. The reports up to October 1986 have not detected any new cases.

DEPARTMENT OF EYE HEALTH, INSTITUTE OF HEALTH
Sao Paulo, Brazil

Director : Dr Oswaldo Monteiro de Barros

1. IMPLEMENTATION OF THE EYE HEALTH PROGRAMME IN SAO PAULO STATE

This programme has not yet been totally implemented because of a medical strike lasting many months. The Institute is supervising those health services where the programme was able to be implemented.

2. TRAINING OF PUBLIC HEALTH TEAMS IN THE EYE HEALTH PROGRAMME

3. COURSES AND CLASSES

- 3.1 Universities: Public Health School, St. Paulu's University; Paulista Medicine Federal School, Jundiai University; Campinas University, etc.
- 3.2 National Seminar on Eye Health - Brasilia, 1985.
- 3.3 Latino American Seminar of Capacitation in Eye Health Programmes - Sao Paulo - August, 1986.
- 3.4 Public Health Course for Health Secretariat Ophthalmologists.

3.5 Capacitation in Public Health of "Servico de Oftalmologia Sanitaria"

team:

- one doctor followed the Public Health course at the Public Health School, School, University of Sao Paulo
- one social worker did the Introduction to the Collective Health Course - Instituto de Saude - Sao Paulo.

4. EYE HEALTH RESEARCH

- 4.1 Trachoma in Bebedouro City
- 4.2 Ocular morbidity data - Freguesia do O-Sao Paulo city
- 4.3 Ocular morbidity - elderly people in Sao Paulo city
- 4.4 Ocular tuberculosis
- 4.5 Ocular leprosy

5. ELABORATION OF EYE HEALTH TRAINING MATERIAL

- 5.1 Training Manual in eye health
- 5.2 Basic information on eye health: publication by Ministerio da Saude - Brasilia
- 5.3 Eye Health manual for Pediatricians
- 5.4 Standardization in clinical aspects of trachoma.

DR RODOLFO ROBLES V. EYE AND EAR HOSPITAL
Guatemala, Guatemala

Director : Dr F. Beltranena

1. TRAINING

1.1 Primary eye care training

The Type I course, designed for teachers and community leaders, who are responsible for vision screening in their schools and communities, has been given to 2700 persons.

Type II course, intended to promote primary eye care delivery techniques among physicians and nurses in Health Centres of the National Health care systems, was given to 385 physicians.

1.2 Graduate training

Medical students from the Medical School of Universidad Francisco Marroquin attended a course in ophthalmology at the Dr Rodolfo Robles V. Hospital.

1.3 Postgraduate course

Fifteen residents are actually engaged in the Residency Programme at the Dr Rodolfo Robles V. Hospital.

At the end of January 1987, six new ophthalmologists will receive their diploma. Three of them are Guatemalans, one is from Honduras, one from Brazil and one from Ecuador.

2. PREVALENCE OF BLINDNESS SURVEY

The survey in the province of Chimaltenango has been completed. The analysis of data is being carried out. The data already analysed gave very interesting results. The amount of

blindness is low, but visual impairment is high. Xerophthalmia was prevalent in 0.0568 per thousand. The prevalence of blinding trachoma is of no significance.

3. RESEARCH

The Dr Rodolfo Robles V. Hospital has been developing its research centre for studies of Sensory Impairment, Ageing and Metabolism (CESSIAM), with the collaboration of several international researchers.

There are forty-one ongoing or completed research projects. Nine of them deal directly with neurosensory problems. Great importance has been given to all research projects on vitamin A.

INSTITUTE OF OPHTHALMOLOGY
Tunis, Tunisia

Director : Professor M.T. Dagfous

The Institute's activities as a WHO Collaborating Centre for the Prevention of Blindness are primarily:

- research primarily aimed at blinding diseases;
- the training of medical personnel and auxiliaries in eye care and the prevention of blindness in liaison with the basic services.

1. RESEARCH

1.1 Epidemiology of cataract in Tunisia

Epidemiological studies of cataract in Tunisia carried out during the period 1985-1986 established that cataract is the main cause of curable blindness (51% of cases). The number of cataract operations is 97 per 100 000 inhabitants and such operations accounted for 30% of all surgical interventions in the years 1980-1985. All types of cataract are found: senile or pre-senile cataract is involved in 81% of cases, 7% of which are in patients under the age of 49 years; 17.5% between 50 and 59 years of age, and 75.5% are 60 years or older. The occupational groups most affected are workers in agriculture (33%) and other workers whose trade is conducted in the open air and who are most exposed to the sun (39%). Diabetic cataract was diagnosed in 11.5% of cases, traumatic cataract in 3.46% and congenital cataract in 4.26%. Diabetes and solar radiation are the risk factors conducive to cataract formation. All these studies reveal the importance of prevention and the need to organize campaigns for the surgical treatment of unoperated cataract.

1.2 Studies on heredity in childhood blinding diseases and on the role of consanguinity

Hereditary conditions are far from being exceptional in ophthalmology. In Tunisia they are the main source of blindness in children and adolescents.

Among these diseases, congenital glaucoma and congenital cataract alone account for 46% of the blindness among Tunisian children. Tapetoretinal degeneration is found in 16% of cases. The mode of transmission for a number of the blinding diseases of childhood has been studied, with the aim of guiding prevention towards genetic counselling and the education of families. The following results were obtained:

(a) Congenital glaucoma: A study of 70 cases, 26.6% of which were familial, showed that transmission is autosomal, recessive and sex-controlled. The condition mainly affects females. The consanguinity rate is extremely high at 66.6%, and the condition affects other children of the same family in 25% of cases.

(b) Congenital cataract: 116 cases of congenital cataract in 51 families were studied. The mode of transmission most frequently established was autosomal recessiveness (64.7%), which is related to the consanguinity rate (68.6%). The dominant mode of autosomal transmission is found in 17.7% of cases. The risk of first cousins being affected is 30% when transmission is recessive.

(c) Retinitis pigmentosa: This study covered 40 families in which there were 65 cases. The genetic survey showed that transmission was by the autosomal recessive mode in the majority of cases (93%) and was more rarely sex-linked. This transmission is encouraged by the high frequency of marriages between close relatives, and the disease may appear in 25% of families in which cases are known.

1.3 Studies on the risk factors of trachoma (in collaboration with the Francis I. Proctor Foundation for Research in Ophthalmology)

Three hundred patients from southern Tunisia, who had previously been examined in 1969-1970 when they were between birth and six years old, were re-examined in 1986 at ages of between 16 and 23. The aim of the study was to test out the hypothesis that children suffering from severe or moderate trachoma would develop complications 10-15 years later and thus to identify the signs that might lead to severe conjunctival scarring that is the cause of such complications. In practice, children whose condition required intensive treatment were sought. The signs established were mature follicles, hyperplasia of the optic disc and conjunctival scarring occurring at an early age (see the table below).

<u>Examination in 1970</u>		<u>Examination in 1986</u>	
131 cases		128 cases	
F ₃	54%	C ₀	5%
P ₃ -P ₂	85%	C ₁	41%
C ₀	59%	C ₂	29%
C ₁ -C ₂ -C ₃	41%	C ₃	25%

2. TRAINING

Training of personnel in eye care is under way in the governorships covered by the programme, and has been given to a total of 200 persons.

The manual on primary eye care produced in collaboration with the National Research and Teacher Training Centre is currently being rewritten and a new edition is to be issued.

A video film entitled "What to do about red eyes when there has been no injury" has been made with the National Research and Teacher Training Centre, and is now available for training purposes.

The training of doctors specializing in ophthalmology is proceeding satisfactorily. During the academic year 1984-1985, 23 residents completed a four-year course of study and successfully took the final examination; 16 other specialists completed their training in 1985-1986. In the regions covered by our programme, several ophthalmologists hold posts in public health or have set up in private practice. They include four at Gabès, one at Djerba, two at Médnine, two at Gafour, one at Tozeur, one at Sidi-bou-Zid and one at Kasserine.

KING KHALED EYE SPECIALIST HOSPITAL
Riyadh, Saudi Arabia

Director : Dr Ihsan Badr

INTRODUCTION

The King Khaled Eye Specialist Hospital (KKESH) is a modern 263 bed ophthalmic hospital in Riyadh, capital of Saudi Arabia, which commenced activities in December 1982.

The World Health Organization proposed KKESH as a Collaborating Centre in February 1985. A Royal Order approved KKESH collaboration with WHO on 19 May 1985, and WHO designated KKESH as a Collaborating Centre for the Prevention of Blindness in July 1985.

Dr I. Badr, Associate Medical Director at KKESH and Liaison Officer with WHO, participated in the capacity of WHO Temporary Adviser in the Interregional Meeting on Prevention of Blindness in Geneva, 18-21 March 1985, the Regional Meeting on Primary Care in Tunis, 9-12 December 1985, and the Interregional Meeting on the Management of Cataract within Primary Health Care Systems, held in Denpasar, Indonesia, 15-19 December 1986.

1. TREATMENT

The Outpatient Department dealt with 62 471 patients during 1985 and 53 737 during 1986. Inpatient admissions in 1985 amounted to 6882, and 7631 in 1986. Emergency Room visits in 1985 numbered 8076 and 10 204 in 1986. The total number of ophthalmic operations carried out in 1985 was 6461 and 9891 in 1986. In the last two years, the total number of cataract extraction operations amounted to 5640, of which 3376 had intra ocular lens (IOL) insertions. Corneal graft operations during the last two years numbered 1478.

2. EDUCATION

An affiliation agreement with King Saud University (KSU), Riyadh, in aspects related to educational activities, became effective on 3 November 1984. KKESH and KSU staff cooperate in undergraduate medical students' ophthalmic courses, elective student courses which include a prevention of blindness course, and post graduate ophthalmic education.

A joint residency programme of three years accepting, on average, ten residents yearly commenced in October 1984. A joint ophthalmic speciality degree will be offered on completion of training and passing a final examination. The first group is expected to graduate in October 1987. The Fellowship programme will be expanded in October 1987. Continuous medical education activities on a weekly basis as well as an average of three annual major seminars are being carried out. A training programme for ophthalmic assistants and technicians has commenced, and 13 certified ophthalmic assistants and 5 certified technicians have graduated. It has been recognized that WHO could utilize the existing programme and jointly develop further training programmes for auxiliary personnel from other countries, particularly ophthalmic assistant technicians and ophthalmic nurses.

3. PREVENTION OF BLINDNESS ACTIVITIES AND RESEARCH

The recommendations of the KKESH National Survey on Blindness and Eye Diseases in 1984 are the cornerstone of prevention of blindness activities in the country. Working groups on aspects related to prevention of blindness have commenced within KKESH, the Ministry of Health and the newly-formed Saudi Ophthalmological Society. Some of the regions have formulated prevention of blindness committees. The primary health care approach is and will be further utilized in primary eye care programmes. A training programme for primary health care physicians on aspects related to prevention of blindness and eye disease management has commenced. The intermediate level of ophthalmic care has been constantly evaluated, and efforts for upgrading and increasing facilities are not spared. Public education material is also being developed.

4. RESEARCH

During the last two years twenty-six research projects have been started and/or completed. The causes of eye trauma among children presented to the Emergency Room of the King Khaled Eye Specialist Hospital were studied. Most of the eye injuries were found to be preventable and caused by injuries with pieces of glass, stones, blunt trauma, and other types of accidents. The glaucoma division has perfected a new technique for trabeculectomy using a standardized punch during trabeculectomy procedures.

The risk factors for rupture of the posterior capsule during extracapsular surgery were assessed. Pseudoexfoliation of the lens was found to be a significant risk factor for zonular breaks during surgery.

YAG laser iridotomy was assessed as a modality for the treatment of angle closure glaucoma. Over 200 eyes have been treated. Results have shown that the procedure is safe and effective. YAG capsulotomy in malignant glaucoma management was also evaluated.

A study was carried out on ophthalmia neonatorum in Saudi Arabia in which the causes and incidence were studied.

In a series of 113 consecutive serum samples from asymptomatic Saudi Arabian patients presented to the Hospital, the samples were subjected to enzyme-linked immunosorbent assay technique for detection of toxoplasma antibodies (IgG), 18 samples (15.9%) of the serum specimens showed toxoplasma antibodies.

In the field, 18 679 schoolchildren were screened in the Al-Ahsa region of Saudi Arabia. It was found that only 1772 children had clinical evidence of active trachoma. The prevalence of active trachoma among schoolchildren in that region was assessed and all children with active disease were treated. Risk factors in the transmission of trachoma were studied.

Seven brands of commercially imported eyeliners (Kohl) were tested. Heavy contamination with gram negative bacilli and a number of fungi were present in these brands.

INTERNATIONAL CENTRE FOR EYE HEALTH, INSTITUTE OF OPHTHALMOLOGY
London, United Kingdom

Director until 30 September 1986 : Professor Barrie R. Jones

Director from 1 October 1986 : Professor Gordon J. Johnson

1. TEACHING ACTIVITIES

During 1985 and 1986, which were the fourth and fifth years of the development of this new Centre, the highly successful Annual Course in Community Eye Health was consolidated and extended to a full six months. The numbers have gradually increased so that there were 18 students in each of the last two classes, comprising 21 doctors, 12 nurses, 1 assistant medical officer, 1 social worker, and 1 public health inspector. Altogether 38 countries have now been represented at this Course. The core curriculum has been taught by the permanent academic staff of the Centre, while each year there are between 25 and 30 visiting lecturers from the United Kingdom and elsewhere.

Members of the academic staff of the Centre have also taught in colleges and on courses in the United Kingdom and in various countries overseas, including Afghanistan, Ethiopia, the Gambia, Ghana, Somalia and the United Republic of Tanzania.

2. WORKSHOPS

In January 1986 a workshop on the prevention of blindness was hosted by the International Centre for Eye Health. This was initiated by the UK Impact Foundation to consider how visual disability can be reduced in practical terms within the United Kingdom. Each of the main causes of blindness was considered and recommendations prepared in order of urgency and priority and were taken to a plenary session on the Prevention of Disablement, held at the Royal Society, London, 3-4 February 1986.

In September 1986 a World Health Organization Trachoma Grading Workshop was held at the Centre when agreement was reached on most of the categories for a new simplified system of trachoma grading for use in the field.

3. RESEARCH

3.1 Cataract in India and Nepal

Dr Darwin Minassian has extended his lines of research into the epidemiology of cataract. The data collected in a case-controlled study in Titligarh, Orissa, has strongly supported the theory of dehydrated crisis in the etiology of blinding cataract, and also implicated smoking as an additional risk factor. A longitudinal follow-up study of a rural population is continuing for up to ten years, to measure for the first time the age-specific incidence of visually disabling cataract in India. Miss Angela Reidy is continuing her assessment of the effectiveness of cataract surgery in Raipur, India, to see how patients' lives are actually affected and to describe the socioeconomic characteristics of those who come forward for cataract surgery and the costs entailed.

3.2 The Gambia Survey

In early 1986 members of the staff of the Centre cooperated with Dr Hannah Faal to complete in 1986 the first national survey of blindness and eye disease for an entire African country. The report and recommendations from this survey were made available in November 1986. Several sub-projects included the assessment of the new WHO eye examination record form, and a further trial of the new WHO Trachoma Grading Scheme, as well as an assessment of the distribution and severity of trachoma within the country.

3.3 Childhood blindness in Africa

Dr Allen Foster has extended his interest in the causes of corneal ulcers in children, and is measuring, with laboratory support, the importance of Herpes simplex in their multi-factorial causation.

3.4 A double blind control trial

The Phase III Ivermectin Study was carried out in Togo between May 1985 and June 1986 by Dr Samer Hussein, Research Fellow to Professor Barrie Jones, in a joint study with Dr Hartwig Schultz-Key of Tübingen. It has helped to establish ivermectin as a safe and effective treatment for severe and moderate onchocerciasis.

3.5 The City Eye Study

The City Eye Study has moved its management to the International Centre for Eye Health. It was initiated by Dr T.R. Cullinan and Mr R.A. Whitelocke of St Bartholomew's Hospital as a 10-year longitudinal study of the occurrence, natural history, and etiological factors associated with cataract, senile macular degeneration and glaucoma in a cohort of people reaching retirement age. Over 1000 volunteers were recruited, and are being examined in the second three-year phase.

4. CONSULTATIVE AND OTHER OVERSEAS ACTIVITIES

Professor Barrie Jones led a small team of WHO consultants in May 1985 to advise in the management of possible long-term effects in survivors of the chemical tragedy in Bhopal, India.

Mr J.D.C. Anderson and Dr G.J. Johnson spent a total of 10 weeks in Afgooye, Somalia, assisting Professor S. Franken with the training of Somali doctors in ophthalmology and in clinical research into conditions related to the extreme desert environment. This is a joint project between the Christoffel Blindenmission and the Somali Government, with which the WHO Collaborating Centre in London is associated.

HELMHOLTZ RESEARCH INSTITUTE OF OPHTHALMOLOGY
Moscow, USSR

Director : Professor E. Yegorova

The Department of Viral and Allergic Eye Diseases at the Helmholtz Research Institute of Ophthalmology was appointed as a WHO Collaborating Centre for the Prevention of Blindness in 1980. The objectives of the Centre are :

- To generate a data bank on blindness epidemiology.
- To train specialists.
- To undertake scientific studies of infectious eye diseases.
- To assess the place of ophthalmic surgery in the medical rehabilitation of the blind and visually handicapped.

A data bank exists on the prevalence, the main causes and the epidemiology of blindness, comprising 270 references. In the industrialized countries and in USSR, blinding conditions include cataract, glaucoma, trauma, retinal disease, infectious diseases, myopia and pathology of the optic nerve.

Training of specialists includes different methods. The Centre has developed a system of instructive recommendations on up-to-date methods of diagnosis and treatment. During the last seven years, 15 such recommendations concerning only viral and other infectious diseases of the eye have been published. This type of training promotes fast adoption of new methodology and technology into everyday practice. Two-week training courses for 25-30 ophthalmologists at a time have taken place 2 to 3 times annually at the Helmholtz Institute.

After the elimination of trachoma in the USSR, the main concern of ophthalmologists has been laboratory, epidemiological and clinical investigations into paratrachoma, epidemic haemorrhagic conjunctivitis and herpetic infection. The immune therapy has occupied a significant place in the treatment of these diseases. It has been established that in severe recurrent ocular herpes, the thymus factor level is sharply reduced in the blood. An immune modulator of T-activin, which has been introduced into practice, reduces the duration of treatment by 40%, and decreases recurrences by more than 5 times.

The estimation of the place of microsurgery in the rehabilitation of the blind is a new trend for the Collaborating Centre in Moscow. Cataract is the main cause of blindness in 43% of all countries, and in 28% of countries cataract is the second blinding condition after trachoma. There are 53 million people in the world with different opacifications of the lens; 17 million of them are already blind. It is possible to help 50% of these blind

people by surgery and by creating conditions for professional rehabilitation. However, only 3 million cataract operations are performed each year. All these problems cannot be solved merely by increasing the number of eye operations or by building new clinics. New surgical technology could result in the solution of, for example, the cataract problem. Professor Fyodorov has proposed, created and introduced an automatic surgical "assembly" line. The work efficacy of the surgeons has increased five-fold and the cost of treatment has been halved.

DR RAJENDRA PRASAD CENTRE FOR OPHTHALMIC SCIENCES
New Delhi, India

Director : Professor M. Mohan

The WHO Collaborating Centre for the Prevention of Blindness was established in 1979 with the objectives of providing facilities for the training of personnel at different professional levels and conducting applied field research in the field of prevention of blindness.

The Dr Rajendra Prasad Centre for Ophthalmic Sciences, which is also identified as the apex centre for the National Programme for Control of Blindness, has been satisfactorily discharging its duties regarding general and specialized eye care to a large number of patients. On average, the Centre handles 980 cases and performs over 30 operations every day. It also provides extensive outpatients and operative services through its mini and comprehensive eye camps.

Academic training in ophthalmology is imparted for MD Ophthalmology, M.B.B.S., B.Sc. (Hons) Ophthalmic Techniques, Ophthalmic Nursing to B.Sc. nursing students, ophthalmic assistants. Post doctoral national workshops/seminar and symposia are also held periodically.

Eleven fellows from abroad visited the Centre and were given training. They participated in the community eye health services, eye camps, training of ophthalmic assistants and technicians, and other paramedical field staff engaged in the prevention of blindness.

The Centre is engaged in various fields of clinical, applied and basic research. At present there are 63 ongoing clinical and basic science projects and in the period under review, 27 research projects have been completed. Sixty-one scientific and research papers have been published in national and international journals. An in-depth study regarding the epidemiological and dietary factors and various blood parameters is in progress, in collaboration with the USA, in order to find the risk factors in cataractogenesis. There is another project probing the various risk factors causing myopia. Various types of treatment, including yoga exercises, are being evaluated to ascertain if they can prevent progression of myopia. Research on ocular mycosis, coagulase negative staphylococci and trachoma is being actively pursued. Several drug trials are being conducted. A new and potent drug, silver sulphadiazine, has been found to be very effective for mycotic keratitis. Active research is in progress on the development of corneal preservation media.

In Community Eye Research, the Centre has undertaken:

- (i) A cataract prevalence study at 15 different centres which has been completed.
 - (ii) A multicentre project to assess the prevalence of ocular morbidity and blindness in the country in 125 districts. A total of 300 000 persons will be examined by a team led by an ophthalmologist.
 - (iii) An operational research study on eye camp methodology and alternative approaches.
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JUNTENDO UNIVERSITY SCHOOL OF MEDICINE
Tokyo, Japan

Director : Professor A. Nakajima

1. TRAINING AND FELLOWSHIPS

Two Indonesian, ten Chinese and nine Indian ophthalmologists visited the Centre for long- and short-term training.

Thirteen seminars and lecture meetings were held by eminent visiting scientists and ophthalmologists from overseas during the period under review.

2. LECTURESHIPS FOR WHO

Professor Nakajima lectured during part of a course on low vision held in Beijing from 7 to 19 April 1986.

3. PARTICIPATION IN INTERNATIONAL MEETINGS

Professor Nakajima took part in the Third General Assembly of the International Agency for Prevention of Blindness, held in New Delhi from 6 to 10 December 1986, and presented the report on prevention of blindness in the Western Pacific Region.

He also took part in the WHO Interregional Meeting on the Management of Cataract within Primary Health Care Systems held in Denpasar, Indonesia, from 15 to 19 December 1986.

4. COMMUNITY AND PREVENTIVE OPHTHALMOLOGY

The Centre organized a visit by a group of Japanese ophthalmologists to WHO Headquarters in Geneva in January 1986, where they participated in a seminar on community and preventive ophthalmology, and discussed prevention of blindness activities in the world. The group met again in Japan in June 1986 to discuss the problem further.

A seminar was organized in November 1986 on preventive ophthalmology and community ophthalmic services, on the occasion of the 40th Annual Congress of Japan Clinical Ophthalmology, held in Tokyo.

5. ONGOING RESEARCH ACTIVITIES

The Centre set up research groups on retinal degeneration and on chloroquin retinopathy, and participated in research on sub-acute myelo-optico neuropathy (SMON), sponsored by the Japanese Government.

It assisted in a nationwide survey on the causes of blindness among Japanese. The Centre also continued to undertake a survey and provide community eye services in the rural village of Sawauchimura and to plan rural eye care services in Japan.