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Impaired Vision and Blindness

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Edited by William John Holmes



# PUBLIC HEALTH OPHTHALMOLOGY

Papers Presented at the Conference on the Prevention  
of Impaired Vision and Blindness, Paris, France, May, 1974

Edited by

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## INTRODUCTION

Each year the improvements in communication and transportation, the growing awareness that the resources of this earth are finite, the realization that the population explosion in any part of the world is a concern of all, and the increased economic interdependence of all countries, have increased importance of internationalism as opposed to nationalism. One of the first segments of our society to ignore political and geographic boundaries was that of medicine, particularly in the field of communicable diseases. Valient efforts have been made by some individuals at great personal sacrifice and by individual societies or organizations to prevent and cure blindness and to rehabilitate those who have lost their sight. Only recently, however, have such efforts been consolidated into a major international force. In 1969 the 22nd World Health Assembly of WHO adapted a resolution requesting the Director-General to undertake a study on the information which is at present available on the extent and/or causes of preventable and curable blindness. In 1972 a working group was convened by the World Health Organization in Geneva to outline an attack on the prevention of blindness. At the Paris meeting of the International Congress of Ophthalmology in July of 1974, Mr. JOHN WILSON, who for many years had been one of the leaders in the prevention and cure of blindness on an international basis through his organization of the Royal Commonwealth Society for the Blind, was elected President of the International Association for Prevention of Blindness. He was voted authority to reorganize this association into an effective instrument for attacking the problems of blindness on an international level. He has very rapidly merged the efforts of the World Council for the Blind, the International Association for Prevention of Blindness, and the various national organizations for the prevention of blindness into the International Agency for Prevention of Blindness. Through his amazing organizational ability, strong financial support is developing from many sources. The interest and willingness to support this international effort has been aroused in many professionals, especially the ophthalmologists, and experts in the field of public health medicine.

The symposium on public health ophthalmology held under the sponsorship of the International Association for Prevention of Blindness in Paris in 1974 is an excellent presentation of the importance and immensity of the problems that lie ahead of us in preventing blinding eye disease on an international basis. It gives a new dimension to the speciality of ophthalmology and offers exciting challenges to those interested in the administrative and medical aspects of public health. Dr. WILLIAM JOHN HOLMES is to be thanked and congratulated for his efforts in organizing and editing the material presented at this symposium.

As the efforts of international public health ophthalmology gain momentum many other such symposia will be necessary, for it is only through the publication of such material that the vast number of persons interested in these problems can be informed of the progress that is being made.

A. EDWARD MAUMENEE M.D.

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## PREFACE

At the XXII<sup>nd</sup> International Congress of Ophthalmology held in Paris, the following resolution, introduced by PROFESSOR G.B. BIETTI, was unanimously approved by both the International Council of Ophthalmology and the International Federation of Ophthalmologic Societies:

As society turns from its past interest, which has been almost exclusively that of curing diseases in individuals, towards concern for preserving and promoting the health of populations, the science of ophthalmology must also increasingly direct its interest towards the public health aspects of eye health.

The field of public health ophthalmology, as a newly emerging concept, offers many opportunities for research and practice of comprehensive eye-health care which includes, in a continuum, prevention, treatment and rehabilitation. It is not, it should not and it cannot be considered as a sub-specialty. It is a new dimension of ophthalmology as a science and a service.

It is considered necessary to develop rapidly this aspect of ophthalmology at the national and international level by:

1. issuing national policy statements for the field of ophthalmology;
2. strengthening the professional dialogue with the disciplines which are relevant to this approach (epidemiology, health administration biostatistics, etc.);
3. promoting the inclusions of public health aspects in ophthalmological curricula; and
4. including public health ophthalmology in the agenda of national, regional and international societies' meetings.

This resolution is timely as there are many ways available for its implementation.

Modern medical and surgical discoveries, improved methods of communication and transportation, emphasis on adequate nutrition and sanitation, the use of the mass media, increasing involvement of allied health personnel provide means to prevent blindness and impaired vision on an unprecedented global scale.

The successful efforts of Dr. A. EDWARD MAUMENEE of the U.S. and Mr. JOHN WILSON of the U.K. in persuading the World Health Organization to include prevention of blindness within its sphere of activities were a cornerstone of modern public health ophthalmology. The further affiliation of the International Association for the Prevention of Blindness with UNICEF, ILO, the World Council for the Welfare of the Blind and its affiliates, the successful Jerusalem Seminar on the prevention of Blindness held in 1971, and the Paris Conference on the Prevention of Impaired Vision and Blindness held in 1974 were additional building blocks for present-day public health ophthalmology.

Contributors to this volume are principally ophthalmologists from the five continents. Their work was based on clinical experience as well as the untiring efforts of scholars and scientists from a wide array of disciplines that include biochemistry, virology, genetics, nutrition, circulation, and a host of others.

Prevention of blindness from trachoma and diabetic involvement of the eyes is not included in this volume. These subjects were included on the agenda of the XXIIInd International Congress of Ophthalmology and will be published in the ACTA of that Congress.

This summary of prevailing concepts, techniques, mass delivery of eye health care, and research in Public Health Ophthalmology around the world is offered with the hope that it will serve as still another cornerstone for the prevention of needless blindness in future generations.

WILLIAM JOHN HOLMES, M.D.



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# MOBILIZATION OF PUBLIC OPINION IN PUBLIC HEALTH OPHTHALMOLOGY

JOHN WILSON

*(Hayward's Heath, Sussex, England)*

To mobilize public opinion in public health ophthalmology, may I emphasize three points:

First, there is the need for public awareness of the massive and growing problem of needless blindness and the consequences of any failure to take effective action before population growth makes that problem almost insoluble. Secondly, there are the resources which need to be mobilized if we are to undertake this task in more than a marginal sense. Finally, the implication of all this for the international organizations concerned, the need for expansion, for coordination, and for a world view of priorities.

The broad facts are not in dispute. There are at least fifteen million blind people in the world and unless decisive action is taken, there could be thirty million by the end of this century. In the developing countries, where numbers are growing most rapidly, most of this blindness is preventable and much of it is curable.

In human terms the cost of blindness is incalculable. In economic terms it is astonishing, mounting to an annual budget exceeding one billion dollars simply for rehabilitation, welfare and basic maintenance. In the developing countries, rehabilitation extends only to a minute fraction of the blind and those of us who are concerned internationally with blind welfare look with horror at the prospect of new burdens totally beyond foreseeable resources.

This is already happening on a scale exceeding our worst expectation. Two years ago in Bangladesh 100,000 children are estimated to have gone blind from xerophthalmia. In India there may now be four million people blind from cataract. Beyond this there are the awesome statistics of eye disease — twenty million people affected by onchocerciasis, five hundred million by trachoma.

We know these facts but they are not part of that general awareness which forms public opinion and generates political and administrative action. The specialists are concerned, but the case for action has not yet been sufficiently made to people who set national priorities and design development plans — the Prime Ministers, The Ministers, the political and administrative leaders, the legislators. This, I believe, is why even in those countries where there is a compelling case for immediate action, the prevention of blindness fails to receive the priority it so obviously deserves.

It will not be easy to attract attention in a world drenched and numbed with statistics. The prevention of blindness has, for too long, been presented as a medical specialism or a bi-product of welfare concerned with un-

pronounceable diseases like onchocerciasis and xerophthalmia. Yet, essentially, it is concerned with immediate human realities — a child blind for lack of green vegetables, a community at risk because there are blinding flies in the river. The time has perhaps come when, adding together the insights of all our disciplines, we can present this need in its broad, understandable human outline — not just as a technique, a subject, but as a cause and a movement generating mass interest, expressing itself through national plans and the co-ordinated programmes of international agencies.

The causes of blindness have been sufficiently identified and there is no doubt that, given the resources and personnel, it would be possible in the next two decades to control the diseases which produce most of the blindness in the developing world. Obviously, there is a need for intensive research, for surveys and the demonstration of new techniques — subjects which at present dominate the agendas of our international conferences. They are, I venture to think, secondary in importance to the mobilization of resources and the need to achieve that coordination of structures and philosophies which can transcend the boundaries of separate disciplines and set our objective within the significant movements and aspirations of our age.

The resources which are required look formidable when measured against the total inadequacy of the resources at present available. They are not if we measure them against the scale of benefits which will result or even against the cost of inaction. What is it worth to a country such as Indonesia to save 10.000 children a year from nutritional blindness — or to India restore sight each year to another half million people blinded by cataract? Just such calculations were made recently by the World Bank in assessing the economic value of controlling onchocerciasis in West Africa; because that program was justified in terms of cost effectiveness, millions of dollars became available.

What would be the cost of coordinated action throughout the developing world to control, over the next 25 years, onchocerciasis, xerophthalmia, trachoma and cataract, and so to break the link between blindness and population growth? In terms of national and international budgets the cost would be large but it would not be astronomical and, given a sufficient movement of international opinion, it would, I am convinced, not be unobtainable. If that cost is not paid now in rational planning and coordinated action, the bill will not go away; at compound interest it will return to be paid in mounting economic loss, in human frustration, in the stunted lives of children.

Only the United Nations and its specialized agencies, acting with member governments, has the capacity to generate and deploy resources on that scale. Already the ground work has been laid in the resolutions of the World Health Assembly, and in the action of WHO, UNICEF and others. Beyond this point even these world giants can act only in response to national requests within a sympathetic climate of opinion.

It is the indispensable role of the non-governmental agencies to create that climate and the conditions within which large scale governmental action becomes possible. To do this, we must be capable of developing our own resources and of concerting them within a movement which is large

enough to influence international opinion and to promote national action. It must be broad enough to comprehend every relevant discipline and organization. It must command sufficient funds to demonstrate its policies and to make a significant contribution to the prevention and cure of blindness on a global scale.

During the past three months, the international organizations concerned with blindness and its prevention, have been discussing ways in which such an organization could be established and exploring the support it might receive internationally. Already, there is agreement on objectives and a large measure of accord about the type of organization required.

The World Council for the Welfare of the Blind — with its constituent organizations in over 60 countries, supports this action and will participate in any realistic international effort to prevent and cure blindness. The leadership of the International Council of Ophthalmology has welcomed the initiative and is participating in the discussions. The International Association for the Prevention of Blindness — with its associated organizations and its long history of dedication to this cause — has a unique contribution to make to any such development. It might, indeed, serve as the nucleus of the new enterprise.



# BLINDNESS IN INDONESIA

J.H.A. MANDANG

*(Manado, North Sulawesi, Indonesia)*

## INTRODUCTION

Indonesia, being a developing country, is still facing poverty. The annual income per capita is US \$ 100.00. Inadequate food supplies, lack of knowledge, education, and medico-hygienical facilities, increasing high birth rate — 30 per thousand — are the well-known problems of developing countries.

## POPULATION

According to the 1971 Population Census, the Indonesian population is 119,2 million. Indonesia ranks fifth after China, India, the USSR and the United States of America. The age incidence of the Indonesian population is as follows:

|                    |                      |
|--------------------|----------------------|
| 0 — 20 years       | 63.6 million (53.7%) |
| 20 — 65 years      | 52.6 million (43.8%) |
| 65 years and older | 3 million (2.5%)     |

The consumptive group — 0-20 years and older — is about 56.2%. In the year 2000 the population is expected to reach 235 million.

## NUTRITION

According to the National Sample Survey of 1963-1964, the Indonesian's daily menu is very poor. It includes 0.5 kg rice of inferior quality, one chicken per 1-1/2 years, one egg per 2 months, and one liter of milk per year for each person.

## EDUCATION

According to the 1971 Census, 93% of the population above 10 years of age have only primary school education or do not attend school at all.

## HYGIENE AND SANITATION

According to the 1971 Census, 18 million (90%) houses do not have toilets that fulfill even minimal sanitary requirements; 14 million (70%) houses are

without a floor; 12 million (60%) houses do not have good drinking water; and 2.2 million families are living as guests in the houses of relatives.

Poverty, lack of knowledge, and lack of education are responsible for poor medico-hygienic environment.

#### ILLNESS - 1973

The morbidity rate is 46 per thousand. The majority of illness occurs in children, especially between 0-4 years of age. The commonest causes of illness are infections of the respiratory apparatus, skin infection, gastroenteritis, malaria, and eye diseases.

The mortality rate is 20 per thousand, mostly affecting children with acute enteritis and infection of respiratory apparatus.

The high birth rate, lack of education and knowledge, infection, and malnutrition are common causes of blindness.

#### INCIDENCE OF BLINDNESS

Blindness data is available from the latter decades of the 19th century. On the basis of visual acuity, 1/60, the general incidence of blindness is 0.8%. This means that in a population of 125 million, there are one million blind. Most of them live in Java and Madura, accounting for 70% of the total Indonesian population.

#### CAUSES OF BLINDNESS

In Java and Madura, trachoma, xerophthalmia, gonococcal conjunctivitis, variola bulbi, acute conjunctivitis with corneal complications, iritis and iridocyclitis are the most commonest causes. Glaucoma, senile cataract, and other fundus diseases occur at the same frequency as in other countries. Outside Java and Madura, the role of trachoma and xerophthalmia as blinding diseases is low. Most of the blindness in Java and Madura is caused by trachoma and xerophthalmia. Those blinded by xerophthalmia are mostly preschool children.

The trachoma incidence in Java and Madura is 20-25%. One-fourth of this incidence represents malignant forms of trachoma. Outside Java and Madura, trachoma occurs in about 5-8% of the population. Xerophthalmia incidence in Java and Madura is 20-25%, mostly in pre-school children. Outside Java and Madura, the percentage is 3.5.

Trachoma in school-aged children is seen in about 25-30% with spontaneous healing en masse. One-fourth of all trachoma in Java and Madura is malignant, causing palpebral and corneal deformities, ending in blindness due to dense corneal scars, panophthalmitis, or atrophy bulbi.

Infection and malnutrition are the most important causes of blindness in Java and Madura. They are the aftermath of centuries of poverty, lack of knowledge and education, insufficient medico-hygienic facilities, with high population densities.



## CAMPAIGN AGAINST BLINDNESS

Eliminating poverty by increasing general welfare and annual income per capita, healthier nutrition, increasing and spreading education, fighting and prevention of the infection by improving general hygiene and public health are the obvious solutions to these problems.

Periodic checkups of school children for trachoma and other eye diseases are highly recommended.

Prevention of xerophthalmia by providing high doses of vitamin A to all pre-school-age children orally or by injection.

Using red palm oil in the villages planted by the village people themselves; instruction to food factories on fortifying certain foods with vitamin A.

Glaucoma surveys in people 40 years of age and older are also recommended.

Increasing and spreading modern ophthalmic surgery.

Better training of and more eye doctors and paramedical personnel, increasing working facilities, transportation, working rooms, instruments and eye medicaments.

Above all:

1. Allocating a greater part of the national budget for public health activities;

2. Better cooperation between various branches of the government services, such as health, education, agriculture, social welfare and the like.

These are also much needed socio-ophthalmological activities on behalf of the blind.

## ECONOMIC LOSS DUE TO BLINDNESS

|                           |   |
|---------------------------|---|
| Cost of Living            | — RP. 60 milliard — US \$ 144.5 million   |
| Cost of Medical Treatment | — RP. 36 milliard — US \$ 86.8 million    |
| Loss of Productivity      | — Rp. 36.16 milliard — US \$ 92 million   |
| TOTAL                     | Rp. 132.16 milliard — US \$ 323.3 million |

## NUMBER OF EYE SPECIALISTS NEEDED

|  |     |
|--|-----|
| Now available  | 105 |
| New eye doctors expected to complete their training every year | 76  |

For the next 7 years, or by the year of 1981, there will be about 634 eye specialists.

For many years to come, each eye specialist will face a great number of demanding tasks.