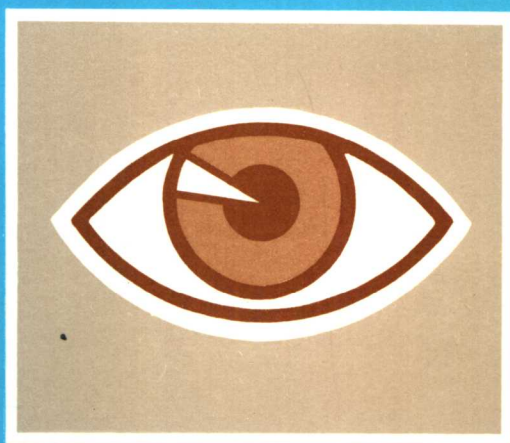


**Strategies
for the
Prevention of Blindness
in National Programmes**

A primary health care approach



World Health Organization

The World Health Organization is a specialized agency of the United Nations with primary responsibility for international health matters and public health. Through this organization, which was created in 1948, the health professions of some 160 countries exchange their knowledge and experience with the aim of making possible the attainment by all citizens of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life.

By means of direct technical cooperation with its Member States, and by stimulating such cooperation among them, WHO promotes the development of comprehensive health services, the prevention and control of diseases, the improvement of environmental conditions, the development of health manpower, the coordination and development of biomedical and health services research, and the planning and implementation of health programmes.

These broad fields of endeavour encompass a wide variety of activities, such as developing systems of primary health care that reach the whole population of Member countries; promoting the health of mothers and children; combating malnutrition; controlling malaria and other communicable diseases, including tuberculosis and leprosy; having achieved the eradication of smallpox, promoting mass immunization against a number of other preventable diseases; improving mental health; providing safe water supplies; and training health personnel of all categories.

Progress towards better health throughout the world also demands international cooperation in such matters as establishing international standards for biological substances, pesticides and pharmaceuticals; formulating environmental health criteria; recommending international nonproprietary names for drugs; administering the International Health Regulations; revising the International Classification of Diseases, Injuries, and Causes of Death; and collecting and disseminating health statistical information.

Further information on many aspects of WHO's work is presented in the Organization's publications.

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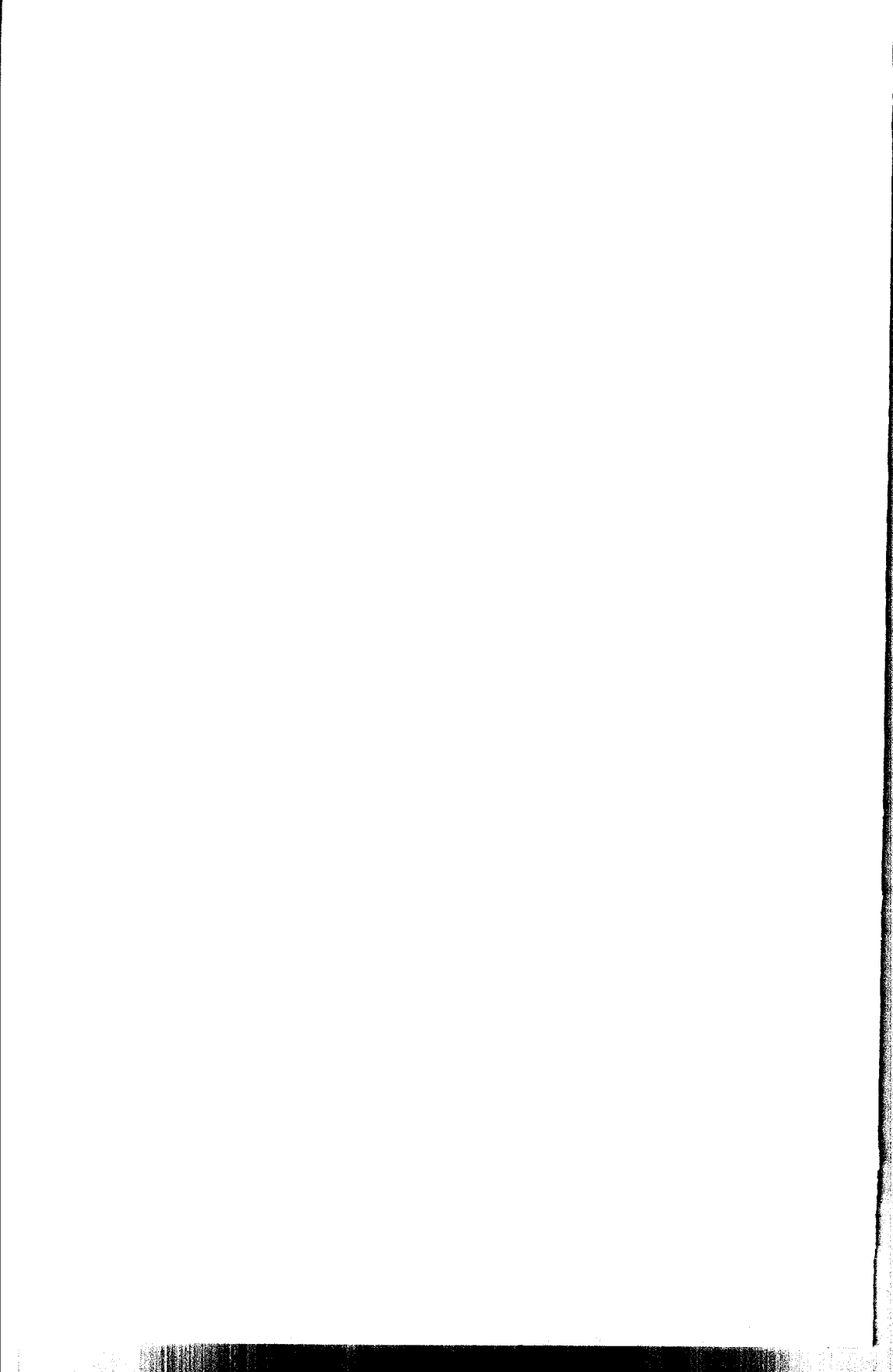
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FOREWORD

In 1982 the Thirty-fifth World Health Assembly approved the Seventh General Programme of Work of the World Health Organization covering the period 1984-1989, which sets out a number of practical targets that must be attained if health for all by the year 2000 is to become a reality. One of these targets is to foster national and international action so that by 1989 programmes will exist in at least 60 developing countries for the prevention of blindness, the restoration of sight to the curable blind and the provision of essential eye care and access to referral services in communities at present underserved.

There is little time in which to reach this target. This book has therefore been prepared to provide guidance to countries in the preparation of effective programmes.

Halfdan Mahler, M.D.
Director-General
World Health Organization

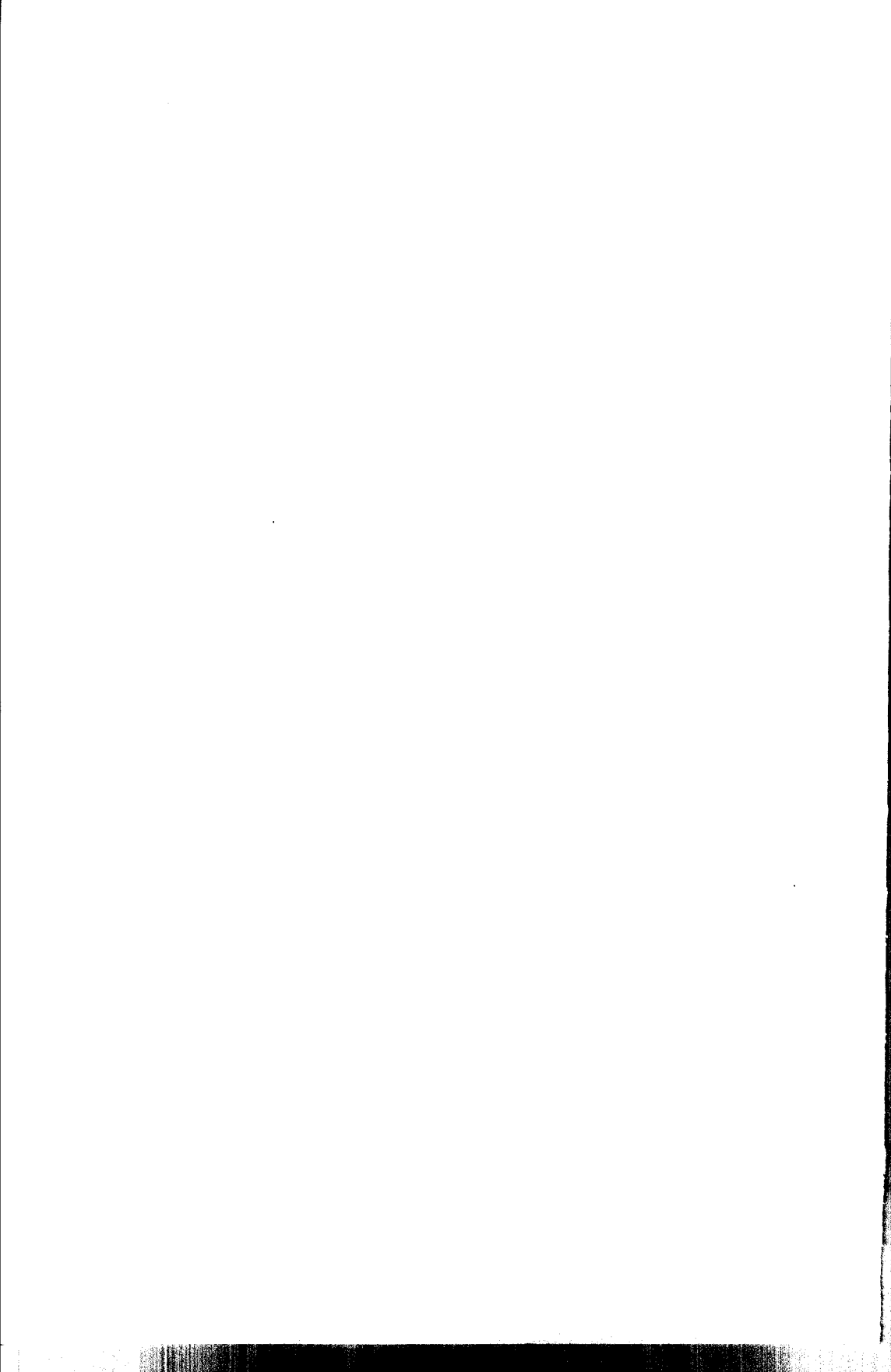


PREFACE

This book has been jointly prepared by several of the WHO Collaborating Centres for the Prevention of Blindness. It was revised by a working group, convened in November 1981, and further endorsed by the WHO Programme Advisory Group on the Prevention of Blindness at its Fourth Annual Meeting in 1982.

The first section of the book gives the general background and information and rationale for blindness prevention as an integral part of primary health care and the development of eye health services. The second section deals with the planning and initiation of national programmes for the prevention of blindness. The third section describes the elements of general eye care at the primary level, and the final section gives the specific strategies for the control of some major blinding disorders in developing countries.

It is hoped that the present book will provide a useful tool for national health administrators and medical professionals to plan and initiate action in the field of prevention of blindness.



1. INTRODUCTION AND BACKGROUND

THE CONCEPT OF AVOIDABLE BLINDNESS

Blindness is a major health problem that has received relatively little attention in worldwide efforts to promote health. The vast majority of the world's blind live in developing countries, where infections, malnutrition and lack of eye care give rise to a high proportion of blindness, particularly in rural populations. Thus these countries have blindness rates that are 10–40 times greater than those of industrialized countries, where blindness is due mainly to degenerative and metabolic disorders.

It has been estimated that there are at least 28 million blind in the world, if blindness is defined as inability to count fingers at a distance of three metres, which is the definition recommended by WHO (see Table 1). There are altogether an estimated 42 million people with severe visual loss, i.e., visual acuity of less than 0.1 (6/60) or the inability to count fingers at 6 metres.

A major portion of the blindness encountered in developing countries can be either cured or prevented by reasonable deployment of skills and resources, and this is termed avoidable blindness. Blindness of infectious or nutritional origin can be easily prevented and visual loss from cataract can be restored by simple surgery. Endemic trachoma and associated infections affect approximately 500 million people in the poorer rural communities of developing countries, and can be controlled by mass application of antibiotic ointments in children and corrective lid surgery in adults. Malnutrition due to impaired vitamin A metabolism can result in permanent blindness by damage to the front of the eye (cornea) particularly in children living in communities with general malnutrition. Cataract or opacity of the crystalline lens of the eye occurs more frequently

TABLE 1. CATEGORIES OF VISUAL IMPAIRMENT ^a

Category of visual impairment ^b	Visual acuity ^c with best possible correction	
	Maximum less than	Minimum equal to or better than
1	6/18 20/70 3/10 (0.3)	6/60 20/200 1/10 (0.1)
2	6/60 20/200 1/10 (0.1)	3/60 (finger counting at 3 metres) 20/400 1/20 (0.05)
3	3/60 (finger counting at 3 metres) 20/400 1/20 (0.05)	1/60 (finger counting at 1 metre) 5/300 (20/1200) 1/50 (0.02)
4	1/60 (finger counting at 1 metre) 5/300 (20/1200) 1/50 (0.02)	Light perception
5	No light perception	
9	Undetermined or unspecified	

^aAdapted from *International classification of diseases. 1975 revision*. Geneva, World Health Organization, 1977.

^bCategories of visual impairment 1 and 2 are referred to as "low vision" and categories 3, 4, and 5 as "blindness". If the extent of the visual field is taken into account, patients with a visual field no greater than 10° but greater than 5° around central fixation should be placed in category 3, and patients with a field no greater than 5° around central fixation should be placed in category 4, even if the central acuity is not impaired.

^cFor the first four categories of visual impairment, the different lines of figures in each box of the visual acuity columns represent the same level of acuity expressed according to different notations. The first line gives the notation used with the Snellen 6-metre scale (and, where applicable, the corresponding ability to count extended fingers at a set distance); the second line gives the equivalent notation used with the 20-foot scale; the third line gives the decimal notation.

with advancing age and may affect more than 90% of those over 60 years. It constitutes the major cause of easily curable blindness in most regions, as vision can be restored by simple, effective surgery. The parasitic infection, onchocerciasis, is a major cause of blindness in some African countries, and is present in some foci in Central and South America; its control depends on vector control. Blindness due to ocular trauma can be controlled by preventive efforts at the community level, and by early, appropriate treatment. Glaucoma is a group of diseases characterized by an internal pressure of the eye so elevated that visual impairment occurs. It accounts for about 10%

of all blindness. Its control depends on case detection and appropriate surgery or treatment with eye drops.

The general lack of eye health services in underserved communities in developing countries is responsible for much blindness. Early treatment of infectious and nutritional eye disease is essential to prevent visual loss, and such treatment can often be delivered effectively by auxiliary health personnel. The simple guidelines for primary eye care presented in this document should enable any health worker to deal effectively with most of the common eye diseases.

Blindness is an enormous burden to society, and the cost from lost productivity and labour, and from rehabilitation and education of the blind, is immense and is growing. Swift and effective application of overall resources to prevention of blindness will provide an enormous national saving both in cost and in human suffering. The cost of preventing blindness is only a small fraction of the expense involved in the rehabilitation of the blind, so that the cost-effectiveness of preventive measures against blindness is very advantageous.

The vast amount of human suffering attendant upon blindness and the seriously affected quality of life are reflected ultimately in the reduced life expectancy of the blind in some developing countries.

The objectives of the WHO Programme for the Prevention of Blindness are to make available essential eye care to all populations and to eliminate avoidable blindness. National blindness rates should be reduced to less than 0.5%, with no more than 1% in individual communities. To achieve this, effective national programmes are required, using systematic community-based action to eliminate avoidable loss of vision. Unless rapid and systematic preventive and curative action is taken, the number of blind is likely to double by the year 2000.

OVERVIEW

This publication describes the necessary components of a national blindness prevention programme effectively integrated into an overall primary health care system. The methods by which an in-

dividual country achieves this goal will necessarily depend upon the existing structure of health care delivery and the state of blindness prevention activities. Where an effective vertical blindness prevention activity already exists, such as trachoma or xerophthalmia control, this may be broadened to include activities relevant to the prevention of other blinding conditions. Where such activities are not yet in place, and a primary health structure is being developed, blindness prevention activities should be included as an integral component from the start. Emphasis should be placed on developing activities at the primary, village level, as these will benefit the greatest numbers. However, secondary and tertiary facilities should also be developed to provide continued training and stimulation to the rest of the system and care for more complicated cases, and gradually to raise the level of sophistication and competence of the entire programme.

GENERAL ASPECTS OF THE PRIMARY HEALTH CARE APPROACH TO PREVENTION OF BLINDNESS

Primary health care consists of:

“... essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination.” (Article VI of the Declaration of Alma-Ata, 1978).

The prevention of blindness must be an integral part of primary health care. There are three distinct, closely related components to the primary health care approach, only the last of which requires direct interaction between a sick individual and medical personnel. They are:

- (1) Social and community developments that promote health through changes in behaviour and environment and hence lead to the reduction or elimination of factors contributing to ocular disease, e.g., provision of adequate, safe water supplies; growing and consuming foods rich in pro-vitamin A; construction and maintenance of pit-latrines.

(2) Strengthening of community cooperation to promote, within the family unit, recognition and appropriate care of individuals at risk of blinding disease, e.g., adequate feeding and oral rehydration of children with severe measles or diarrhoea. Community awareness of eye care at this level can be promoted by local action committees who have a knowledge of local circumstances.

(3) Delivery of eye care to all individuals with potentially blinding disorders in all communities (e.g., treatment and referral of infectious corneal ulcers by village level workers; cataract surgery performed by mobile teams or at stationary facilities).

Of the three approaches, community and social development may be the hardest to achieve, but will eventually provide the greatest impact. In many areas of the world blinding infections and malnutrition have practically disappeared following only moderate socioeconomic advance and despite the absence of specific disease control activities. As social development activities require alterations in cultural practices, they are necessarily difficult to achieve and slow to produce a noticeable effect. Their long-term impact, however, will be considerable and will ultimately produce marked savings for the health care systems.

The provision of curative services to sick individuals has the most obvious and immediate impact, and has, therefore, long received a disproportionate share of available resources and attention. Nonetheless, disadvantaged communities throughout the world suffer from a lack of suitably trained manpower to deal with existing disease. As it is possible, and most efficient, to deal with most eye diseases in the communities where they arise, emphasis should be placed on the development of primary eye care and a good referral system.

THE DEVELOPMENT OF EYE HEALTH SERVICES

Prevention of blindness programmes and the delivery of eye care should be integrated with general health services at all levels. The programmes should be based on available resources and a technology which is appropriate for the country or region. The prevention of blindness requires a flexible approach and the incor-

poration of regular and adequate training of various categories of personnel. Programmes should be reviewed on a regular basis, and improvements should be made which are consistent with economic growth and social awareness of the population concerned.

Primary Eye Care

Primary eye care comprises a simple but comprehensive set of preventive and curative actions, which can be carried out by primary health workers, by specialized auxiliary personnel or by other interested persons. The development and implementation of primary eye care activities will depend on the existing primary health care system. Locally available personnel and training programmes for primary health care should be adapted and used to promote and strengthen the delivery of eye care at the peripheral level. However, in areas without any existing primary health care system, services for primary eye care should be developed, which could eventually evolve into more comprehensive health care activities in the community concerned.

The clinical activities involved in primary eye care consist of basic ways of dealing with the three major eye symptoms presented by patients: inflamed ("red") eyes, loss of vision, and pain in the eye. At the primary level, the health worker can manage these problems either by definitive treatment, by referral after immediate treatment or by referral alone. General guidelines for this action have been developed (see section 4), but they must be adapted to conditions in the communities served.

In addition, the primary health care worker should carry out promotive and preventive activities, focusing on essential education and community participation with regard to the prevention of visual loss.

Only a few medicaments and other materials are necessary for primary eye care. At the very least, an antibiotic eye ointment (usually a tetracycline) is needed, but other drugs that may be useful are vitamin A capsules, a second antibiotic ointment and zinc sulfate drops (for mild irritations). Bandages, sticking plaster (tape) and eye shields are very useful for primary workers, and optional equipment

may include a simple chart to measure visual acuity and a hand torch.

The most important factor necessary to initiate primary eye care is the training of primary health workers to recognize eye conditions and to take appropriate action to deal with the problem. Training manuals for primary health workers should therefore include material on primary eye care. Primary eye care must be supported by reinforcing training and by adequate referral services at the secondary level.

Secondary Eye Care

The eye care facilities available at the secondary level should provide for the definitive management of common blinding conditions such as cataract, trichiasis and entropion (inturned eyelids), ocular trauma, narrow-angle glaucoma and corneal and intraocular infections. Secondary eye care activities are usually carried out in dispensaries or in hospitals at the district or provincial level, by staff such as ophthalmic assistants, general practitioners trained in eye care or fully qualified ophthalmologists. This level of eye care should, as much as possible, be integrated into the general medical infrastructure, making the fullest possible use of existing facilities in terms of staff and equipment.

The secondary eye care centre plays an important role as the referral level for patients that cannot be managed at the primary level. Close liaison between such a centre and the local health workers, is, therefore, essential, and the staff at the secondary level must be actively involved in the training and supervision of local health personnel working in the field of eye care.

The management of less common blinding conditions, which may require sophisticated equipment and specialized staff, should normally not be carried out at the secondary level of eye care. The resources for treating such conditions, e.g., corneal grafting, retinal detachment surgery, etc., are usually more efficiently provided in regional or national centres for tertiary eye care.