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# Community ophthalmology plan for underserved populations

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## HISTORICAL BACKGROUND

The term "community ophthalmology" was first proposed by Bath in 1976.[1] "Community ophthalmology" is defined as the discipline of blindness prevention using the methodologies of public health, community medicine, and clinical ophthalmology. The community ophthalmology concept was developed as a result of observations of excessive rates of preventable eye diseases in historically underserved communities in the United States. Even today, high rates of blindness exist among American Blacks in urban and rural ghettos, among American Indians isolated on reservations, and among Hispanics in immigrant seasonal farm camps. These groups are considered underserved because they do not have realistic access to hospital-based medical care. Moreover, traditional public health institutions are unfamiliar with providing primary eye care. Hence, community ophthalmology emerged as a working concept as well as a solution to bridge the gap between hospital-based and public health institutional health services.

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## PROBLEMS WITH HOSPITAL-BASED HEALTH SERVICES

Hospitals are very expensive to build, staff, equip, and operate, and consequently, only relatively few can be afforded by developing countries. Moreover, their construction and maintenance leave very little in the budget for staffing dispensaries outside the urban areas. (Frequently, hospitals are built and perceived as the main center for all health activities.) Hospitals in the developing country setting are not cost effective, and they usually are not efficiently run. A prestigious teaching hospital in the capital city of a country has been known to take more than 50% of the health budget of the entire country to run. Obviously, in the less-developed countries of the world with very limited resources, the hospital does not seem to be the most efficient or economical way of delivering health services.

Hospitals typically are located in the more modern parts of urban areas and few in the ghettos. Similarly, health centers and satellite clinics usually are built in modern parts of the city or in new resettlement housing projects rather than in the urban ghettos or the periurban shanty towns. It follows that only the few

who are privileged to be near a hospital and who also are aware of the services being offered will have access to health services of any description. In the urban areas the severe overcrowding and the long waiting periods at the health facilities are severe limitations to health services for ghetto dwellers.

The attitude of the staff and the *modus operandi* of the health facilities in the more modern and affluent parts of the cities are geared to a higher social class. These constitute a social class barrier to health services, particularly in societies with a high social class consciousness. The health needs of the underserved population are usually of a crisis intervention nature. The emergency rooms and outpatient departments of the city hospitals are usually severely overcrowded, and very long waiting periods are the standard rather than the exception. Staff are generally limited in number and come from many different backgrounds and training. They may have little understanding of the cultural pattern of the underserved population and usually can spend only a few moments attending to the presenting symptoms, with no explanation of disease causation or prevention. Furthermore, the influence of traditional healers, superstitious beliefs, and the lack of appreciation of the concept of Western medicine can be serious deterrents to the use of health facilities.

The hospitals in developing countries, like those in industrialized countries, are set up essentially as crisis intervention centers and undertake very little or no prevention health activities. They typically lack such preventive measures as immunizations and health education. Most hospitals in developing countries do not have public health personnel and services, in spite of the fact that the vast majority of health conditions in the less-developed countries of the world are largely preventable. When preventive health activities are undertaken, they often are designated as separate from, and even in competition with, curative services.

The term "primary care" has been used synonymously with "basic health services." Traditionally, primary care in the United States has included the following: pediatrics, obstetrics and gynecology, internal medicine and public health, and preventive medicine. In developing countries the parallels for these same components are as follows: maternal and child health, nutrition, family planning, and environment and sanitation.

Each of these definitions has excluded ophthalmology because, in general, comprehensive ophthalmic care is not considered feasible in the context of delivery of basic health services. However, when blindness exists endemically or when excess rates of *preventable* blindness exist, then primary eye care must be integrated into basic health services. The problem of blindness prevention is even more complex when, in defined underserved areas, no infrastructure exists for the delivery of basic health services.

## RATIONALE FOR INTEGRATION OF PRIMARY EYE CARE INTO BASIC HEALTH SERVICES

A strategy of primary eye care is necessary in order to take eye care directly to the community within a culturally appropriate context. These underserved communities suffer increased morbidity and mortality from most preventable diseases, and blindness is no exception. Underserved populations are found in both urban and rural areas in developed and developing as well as the underdeveloped countries of the world. Consequently, any effective blindness prevention programs must take into consideration the specific cultural and socioeconomic aspects of the defined population.

It is an unfortunate historical event that prevention has been kept apart from curative services. Prevention has been traditionally the function of the public health field; thus, an artificial dichotomy has developed between prevention and cure. Prevention and cure go hand in hand, and all personnel involved in the treatment of ill health should at the same time be carrying out preventive activities. Most of the blindness caused by glaucoma is preventable, given early diagnosis, consistent management, continuity of ophthalmic care, and health education. Underserved populations in the United States suffer an excessive rate of blindness, similar to the underserved populations in the developing countries of Africa, Asia, and Latin America. In such in-

stances, blindness due to preventable eye diseases such as glaucoma, trachoma, and xerophthalmia predominates.

In the United States the blindness registries for the Model Reporting Areas were reviewed and analyzed for the period 1969 to 1970.[3] (The most recent data are for 1970 because the study was discontinued by the National Eye Institute in 1970.) The data show that the prevalence of blindness in the United States was 127.1 per 100,000 population.[4] However, for non–Whites (predominantly Blacks, Hispanics, and American Indians) the prevalence of blindness was 252.7 per 100,000 population. An analysis of the age-standardized cause-specific data revealed that blindness due to glaucoma occurred eight times more commonly in Blacks than in Whites.

In conclusion, the prevalence data and the etiologic data revealed a community health problem of national proportions for the defined underserved population; therefore, the Community Ophthalmology Strategy was proposed.

In situations in which the infrastructure for basic health services is nonexistent, it is appropriate to consider primary eye care as the vehicle for infrastructure development.[2] Ophthalmic care programs are highly adaptable to the primary care setting. For example, xerophthalmia is essentially an ophthalmic manifestation of a specific nutritional disease. Xerophthalmia rarely exists in the absence of general nutritional deficiencies. Moreover, nutrition is certainly the most fundamental, if not also the best established, component of basic health services. Unfortunately, xerophthalmia prevention programs have not been a specific component of most nutritional surveillance programs. Similarly, general nutritional assessment has been lacking in the few xerophthalmia programs that recently have been established. It is extremely critical to bridge this gap by integrating primary eye services into existing nutritional programs and developing a basic health services infrastructure as an integral part of monovalent eye programs.

Similarly, the prevention of blindness caused by trachoma is adaptable to primary eye care programs emphasizing hygiene, sanitation, and environmental control. Trachoma is a disease with low infectivity, but conditions of overcrowding and lack of clean water supply enhance infectivity. In communities where poor housing and poor sanitary habits exist in association with an abundant fly population, the conditions are provided for trachoma to become endemic. Many diseases owe their causation to poor sanitary conditions in terms of both sewage disposal and water supply. The example of cholera is certainly well known among epidemiologists and environmentalists. The epidemiology of trachoma and its relationship to poor sanitation is not widely appreciated. Although abundant flies, dust, and hot arid climate are contributory to the causation of trachoma, the most important factor is personal hygiene.

Finally, the example of onchocerciasis also proves the applicability of the public health approach to the prevention of blindness. Onchocerciasis occurs endemically in West Equatorial Africa and parts of Central and South America. It has been estimated that more than 20 million people are affected and hundreds of thousands are blind as a result of onchocerciasis. Onchocerciasis is a vector-transmitted systemic disease caused by infestation with the filiarial organism *Onchocerca volvulus*. Chronic infestation causes blindness through sclerosing keratitis and iridocyclitis or glaucoma. Effective measures do not exist for the treatment of ocular onchocerciasis once the keratouveitis and sclerosing pannus have become established. Severe ocular inflammation invariably results in scar tissue, structural alteration, and loss of transparency of the ocular media. *O volvulus* is sensitive to chemotherapeutic agents such as diethylcarbamazine and sodium suramine (Antrypol). However, because significant toxicity is associated with all of the chemotherapeutic agents, an individualized treatment program combined with periodic patient assessment is mandatory. These requirements make this form of treatment unsuitable for mass populations. The prevention of blindness due to onchocerciasis must have its basis in environmental control. Consequently, the vector–parasite relationship in onchocerciasis must form the basis for programs of control. Prevention programs must focus on vector or parasite destruction through ecological control and environment and sanitation control.

In summary, the blindness associated with glaucoma, trachoma, xerophthalmia, and onchocerciasis is preventable given the application of primary eye care and community ophthalmology concepts. A successful plan for implementing the community ophthalmology strategy will involve the steps described below.

## METHODS FOR DEVELOPING THE COMMUNITY OPHTHALMOLOGY PLAN

It is of utmost importance that programs be planned and undertaken in partnership with the community, based on the people's expressed needs and with their fullest possible involvement and participation. Self-determination at all levels of program planning must be encouraged.

### Feasibility Assessment

Before any commitments are made to set up a specific blindness prevention program, it is important to conduct a feasibility study. This would take the form of a preliminary assessment of the epidemiology of blindness, to be examined in greater detail during the planning phase. It would be important to know whether the location for the program is politically and socially suitable. One should ascertain what the level of "felt" need is in both the government and the community and that the program being proposed is within the economic and personnel capability of the area. The existing health services should be assessed and serious thought given to how the proposed program could be integrated into the existing infrastructure.

The planner should be familiar with the existence of any government plan for future development of specific projects so that the blindness prevention program will be part of the overall long-range health services plan.

It is essential to have some idea of the extent of financial support available and promised for the program, as this will help in making the program realistic and within the existing financial constraints. Possible logistical problems should be explored in order to ensure that they are not insurmountable. If these considerations indicate that the program is feasible, then detailed planning may begin.

### Definition of Underserved Areas

The area to be served by the program should be defined clearly. It would be useful to have detailed maps showing the project area, subdistricts, and locations of towns and villages. The physical characteristics of the program area, accessibility, and internal transportation should be ascertained. In this connection, the maps should show roads by grade, canals, bridges, railways, airports, schools, existing and planned health facilities, and other relevant information. A detailed map may not exist, in which case it would be desirable to prepare one during the planning stage.

### Assessment of Population Characteristics

Using any available data (eg, the census figures), tables should be prepared showing the number of people in the program area and their distribution by age and sex. Information also should be included on the number and size of cities, towns, and villages. The occupations of the inhabitants of the area should be included.

### Analysis of Existing Resources

The administrative structure of the health services should be studied and the relationship between the central, regional, provincial, district, and local administrations should be ascertained, as well as agencies—governmental, quasi-governmental, and voluntary—operating in the field of health in the program area.

The available health facilities should be surveyed with respect to physical facilities and services being rendered. The program plan must be developed as a logical expansion and in the context of the health infrastructure that already exists. For example, some infrastructure associated with the World Health Organization smallpox eradication program may still exist, even in the most remotely accessible underserved areas. Whatever infrastructure exists should be utilized as the initial framework for the blindness prevention program.

## Training Primary Eye Care Workers

Primary eye care workers must be selected by, from, and for the community they serve. However, the community organization would need some guidance and criteria for the selection. For example, minimum education and background requirements consistent with the local realities of the situation should be set. If it is the wish of the community, the local traditional healer may be selected for training. In each country, there are different cadres of personnel in the health services; these include the doctors, nurses, midwives, auxiliary nurses, sanitarians, and health aides. It would make for greater efficiency and less fragmentation of services if the various classes of health personnel were trained to function as a health *team.* A health team can function effectively and cover the needs of patients only if each member understands what the other members are doing. Each member should be aware of his/her limitations and know when to refer problems to a more highly trained member, who in turn should know what tasks to defer to the less highly trained members of the team.

Part of the training of the primary eye care worker should be at the district or health subcenter area. The places of training should be as near as possible to the area where primary eye care workers eventually will work. However, the major portion of training must be coordinated within the defined underserved area.

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