Review Article

Training of an ophthalmologist in concepts and practice of community eye health

João M Furtado, Van C Lansingh[1], Kevin L Winthrop, Bruce Spivey[2]

Training in community eye health (CEH; public health applied to ophthalmology) complements clinical ophthalmology knowledge and enhances the physician's ability to meet the needs at the individual and community level in the context of VISION 2020. The upcoming version of the ophthalmological residency curriculum that was developed by the International Council of Ophthalmology (ICO) includes a new, specific section on CEH. It has basic, standard, advanced and very advanced levels of goals (the last one is exclusively for fellows/master students), and provides a public health approach to the main causes of blindness and low vision. The number of individuals aged ≥60 years is increasing twice as fast as the number of ophthalmologists, and as this age group is more likely to become blind/visually impaired, accessibility to eye care in the near future might be suboptimal even in wealthier countries. In order to achieve VISION 2020 goals, it is necessary to train more ophthalmologists and other eye care workers. However, the adoption of CEH component of the ICO curriculum for ophthalmology residents will enable them to meet local needs for eye care.

Key words: Community eye health, prevention of blindness, ophthalmogical residency, VISION 2020

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VISION 2020 is the global initiative created by the International Agency for the Prevention of Blindness (IAPB) and the World Health Organization (WHO) in 1999 with the aim to eliminate preventable or avoidable blindness by the year 2020.[1] In order to reach this goal, VISION 2020 acts to facilitate the development and implementation of sustainable national eye-care programs based on three foundations: Cost-effective disease control, human resource development and infrastructure and technology, and principles of primary health care delivery.[2] The final objective of VISION 2020 is to integrate a sustainable, comprehensive, high-quality, and equitable eye care system into national health-care systems.[2] Among the priorities of disease control and prevention of visual impairment, VISION 2020 currently focuses on cataract, refractive errors, childhood blindness, trachoma, onchocerciasis, age-related macular degeneration, diabetic retinopathy, and glaucoma. Also, VISION 2020 advocates for awareness of the need to improve and increase the number of low vision services.[2]

Ophthalmologists play a key role in community eye health (CEH). They can act not only as healthcare providers, but also have an extended role as managers for efficient service delivery, focus on identifying and prioritizing local needs, coordinate the team approach with other health care workers and also advocate among policy makers and nongovernmental organizations (NGOs) that provide resources and infrastructure to accomplish VISION 2020 goals.

Division of International Ophthalmology, Casey Eye Institute, Oregon Health & Science University, Portland, Oregon, [1]Latin America International Agency for the Prevention of Blindness, Weston, Florida, [2]International Council of Ophthalmology, San Francisco, California, USA

Correspondence to: Dr. Van C Lansingh, 3720 San Simeon Cr., Weston, FL 33331, USA. E-mail: vlansingh@iapb.org

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A recent survey performed by the ICO estimated that there are currently over 200,000 ophthalmologists worldwide, with the majority living in Brazil, China, India, Japan, Russia, and United States.[3] The most up to date estimates of WHO state that there are approximately 285 million people living with visual impairment worldwide.[4] The number of individuals aged ≥60 years is increasing approximately twice as fast as the number of ophthalmologists, and as this age group is more likely to become blind/visually impaired, Resnikoff *et al*. predicted that even in developed countries the number of ophthalmologists will not be enough to cover the population's needs in the near future.[3] Moreover, even in countries with an appropriate number of ophthalmologists, rural and isolated areas can present lack of professionals.

The concept of "community eye health", which is essentially the principles of public health applied in ophthalmology, is sometimes not readily understood. While ophthalmologists are clinically trained to diagnose and treat diseases, the concept of disease prevention at the patient level, and to a greater extent, at the population-level have become essential in pursuing VISION 2020 objectives. It incorporates using epidemiological research, eye health promotion, and disease prevention,[5] at the community level at large in a region or country.

The ICO, an organization founded on the aim to enhance ophthalmic education and improve access to high quality eye care in order to prevent vision loss worldwide, works closely with NGOs, ophthalmologic organizations, and governments to support and execute VISION 2020 initiatives. In 2011, the ICO Education Committee began to update the 2006 ICO residency curriculum first, "Principles and Guidelines of a Curriculum for Education of the Ophthalmic Specialist".[6] The upcoming version introduces a specific section on CEH (Colin Cook, MD, ICO, personal communication February 2012). As with every other topic covered by the curriculum, the CEH section has basic, standard, advanced and very advanced levels of goals depending on the stage of training (the last one is exclusively

for fellows/master students), and provides a public health approach to the main causes of blindness and low vision. It also describes the principles of primary eye health care and introduces the concept of planning a prevention of blindness program. The ICO curricula are presented not as mandatory standards of residency training, but as an educational instrument to stimulate multi-levels of training worldwide and address the needs of the population as expressed above.

Training an ophthalmologist in concepts of CEH complements clinical ophthalmology knowledge and enhances the physician's ability to meet the local needs at the individual and community level in the context of VISION 2020.[2] In this scenario, an ophthalmologist understanding these concepts would be able to identify the main causes of blindness and low vision in his/her community (and globally), implement appropriate strategies to reduce barriers to eye services and provide equitable services for prevention and therapy. An appropriately trained ophthalmologist should be able to act beyond his/her individual practice to serve as a nexus between local healthcare infrastructure and the mechanisms necessary for sight-threatening disease control in surrounding populations.

Due to the advocacy performed by ICO, Pan-American Association of Ophthalmology (PAAO), WHO, IAPB, and NGOs as well as other supranational regional associations of ophthalmologists, there are some successful experiences worthy of mention. For example, since 2008, CEH workshops are being organized by the Brazilian Council of Ophthalmology for second year residents. The topic has recently been included in the Brazilian residency program syllabus. Beginning in 2013, all ophthalmological residents taking the ophthalmology board exam will have to answer questions in this field in order to be approved practitioners in eye care (Andrea Zin, MD, PhD, personal communication February 2012). In African countries (Tanzania, Kenya, South Africa, and the Gambia to name a few), CEH is already incorporated into the ophthalmological curriculum as a 6 week course, which includes lectures, field work, an elaboration of a project, and a final evaluation.[7] Recently, the Pan-American Council of University Professors in Ophthalmology, a group organized by the PAAO, suggested a CEH program to be incorporated in residency programs curricula in the region.[8]

A strong residency program curriculum incorporating CEH concepts is particularly important in low-income and lower- to middle-income countries, where most blindness is most prevalent and resources are not evenly allocated.[9] As cataract is the main cause of blindness worldwide,[9] it is important that every young ophthalmologist is able to perform successfully cataract surgery with an appropriate level of quality upon completion of his/her residency program. That recommendation is even more important in areas where there is lack of ophthalmologists, and training new generations of ophthalmologists on how to work with a team, use appropriate technology, and mobilize local resources is necessary to effectively reduce the burden of visual impairment and reduce the barriers to eye care. Many African countries have one ophthalmologist per 1 million population, and the aim is to reach a 1:250,000 ratio in sub-Saharan Africa by the year 2020.[10]

Cataract surgical training should focus not only on the quantity of new ophthalmologists trained per year, but also on the quality of the services provided. CEH training expands this for the consideration of accessibility and equity of services while monitoring and planning for efficient regular services.

Even though that it is true that there are a few and isolated good examples of eye hospitals and clinics that execute high quality eye care for those who need, it is also important to involve senior ophthalmologists perhaps even from private practice to engage on eye health projects according to local needs.[10] Although there are isolated examples of centers that do not have formal CEH training but work with these concepts in a sustainable way, a senior ophthalmologist could benefit from a more complete understanding of eye disease burden, care, and barriers in order to help design and implement more efficient ophthalmological service delivery within their localities.

In Latin America, for example, the number of ophthalmologists is considered appropriate to meet the population needs in terms of cataract surgeries. Despite this, the Cataract Surgical Rate (CSR) in some of these countries remains low, suggesting that actually only a small percentage of these professionals are performing surgeries and that eye care is not accessible to all who need it.[11] This in part is also due to poor distribution of eye health workers. Therefore, a "seasoned ophthalmologist" may be the best person with training in CEH to overcome patient–ophthalmologist barriers, address challenges in areas such as accessibility and cost of care, essential to reduce the prevalence of visual impairment.

There are some good examples of institutions that have a history of excellence in CEH training, and the most notable one is the International Centre of Eye Health (ICEH; London School of Hygiene and Tropical Medicine). Annually, the ICEH holds the Masters of Public Health for Eye Care (formerly known MSc of CEH). Although the course is designed for all eye care professionals, the majority of the students attending the Masters course are ophthalmologists, and the main purpose of it is to form future leaders in prevention of blindness in accordance to VISION 2020 goals. In this course, the student will not learn clinical or surgical skills, but he/she will be given an epidemiological and public health focus.[12] By the end of the program, the student must be able to critically analyze and execute strategies to reduce blindness and low vision in his/her home country and globally. So far, almost 500 students from approximately 90 countries have graduated from the Masters and the Diploma courses, some with scholarships from governments and NGOs.[12] In Africa, the Kilimanjaro Centre for Community Ophthalmology (Tanzania) and the University of Cape Town (South Africa); Pakistan Institute of Community Ophthalmology (PICO), the L V Prasad Eye Institute (India), and Lions Aravind Institute of Community Ophthalmology (India) in Asia should also be mentioned as institutions of excellence in CEH training just to mention a few.

CEH workshops are already organized with the support of IAPB in Latin America, Africa, and Asia. These workshops provide a holistic approach to eye care in the community, by focusing on prevention, education, and management of eye health programs as a public health intervention. The courses are adapted to the needs and realities of each region. These short-term courses introduce cost models to make eye care more affordable and accessible to the poor, provide training on management efficiency to reduce costs and increase

patient flow, and provide training on community outreach and public awareness.[13] In terms of teaching surgical skills, there are some 'hands-on' courses performed in Asia and Latin America specifically designed to teach Manual Small Incision Cataract Surgery (MSICS), an excellent alternative for phacoemulsification in regions where the latter is not available or not affordable. The MSICS technique is fast, less dependent of expensive technology, highly cost-effective, and provides good quality outcomes when performed by a trained surgeon.[14-17] These surgical technique trainings are incorporated into the ultimate outcome of the various CEH trainings available—the shift in focus of eye care delivery from solely the ophthalmologist treating the patient to the involvement of the entire community from the community health promoter to the nurse, the technician, the ophthalmologist, and the facility administrator. The beneficiary remains the same-the population at large. The difference is that the work of the ophthalmologists is integrated into a community-wide intervention that strengthens the regional health system at large.

In conclusion, while the number of ophthalmologists worldwide increases, the availability and accessibility of their services (and eye care in general) does not meet the demands of the aging population or the community at large, partly because of the aging of the population, but also partly because remaining challenges on distribution of manpower and infrastructure. In order to achieve VISION 2020 goals, ophthalmologists and other eye care providers will have not only to do more, but also do better, and work together on a more holistic approach to introduce or strengthen eye care in regional and national healthcare systems. Community eye heath should be adopted and carried out in ophthalmology to provide sustainable, affordable, comprehensive, and high quality eye care to the underserved population. The adoption of the ICO curriculum, especially when adapted to meet local needs, would provide the ophthalmic trainees the clinical, surgical, and epidemiological tools necessary to identify, measure, and ultimately reduce the barriers to eye care.

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