

VISION 2020: THE RIGHT TO SIGHT - THE CONCEPT, THE PLAN

F. Kyari

Department of Infectious and Tropical Diseases (ITD), London School of Hygiene and Tropical Medicine (LSHTM), University of London, Keppel Street, London, WC1E 7HT, United Kingdom

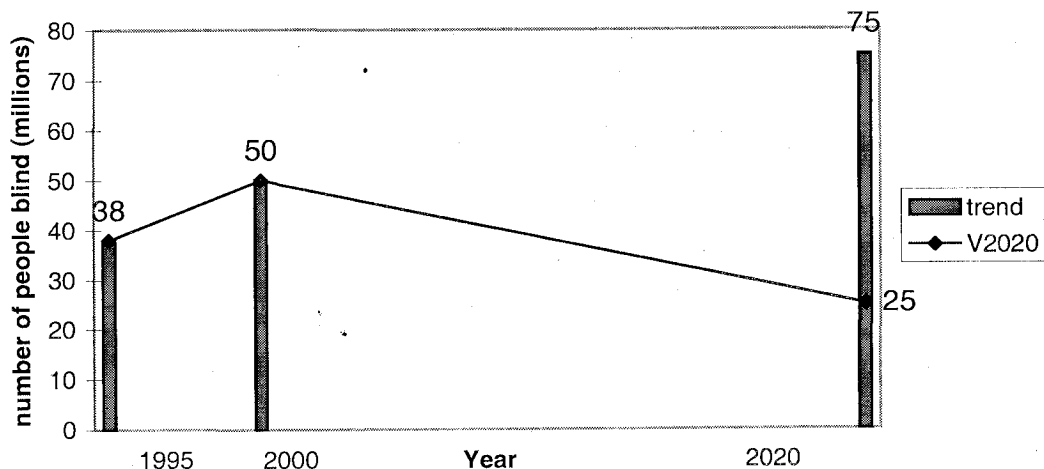
Reprint requests to: Dr. Fatima Kyari, E-mail: fatimayk@hotmail.com or fatima.kyari@lshtm.ac.uk

VISION 2020, coined from the American terminology for perfect vision,¹ is the World Health Organization's (WHO) caption for "The Right to Sight" - the Global Initiative for the Elimination of Avoidable Blindness. Founded in 1998 and launched in Geneva on 18th February 1999², it aims for the control of avoidable world blindness by the year 2020.

In 1995, there were an estimated 38 million people blind worldwide³ with an increase of 1-2 million per year to 50 million people blind in 2000.⁴ If this trend is to continue unabated, with the growing and ageing global population, it is projected that 75 million

people will be blind worldwide by the year 2020 associated with loss in economic productivity of billions of dollars per year.⁵ With the pooling of resources, increased advocacy and intensive implementation of carefully devised blindness control measures, targeting the communities most vulnerable to blindness, WHO in collaboration with member states, International Agency for Prevention of Blindness (IAPB) and other professional and non-governmental organisations (NGOs) believe that this alarming figure can be pared down to 25 million by the year 2020¹ (Figure 1) and continue to decline thereafter.

Figure 1: Estimated blindness worldwide



Blindness, as defined by WHO, is the best-corrected visual acuity (VA) of less than 3/60 or visual field less than 10 degrees from central fixation in the better eye.⁶ This WHO definition of blindness, however, should be revisited since functional blindness is attained even before VA of 3/60 is

reached, and 'presenting' vision rather than 'best-corrected' vision should become the standard definition. It is, perhaps, in view of this that country surveys vary in the interpretation of blindness, especially with uncorrected refractive error blindness.

Blindness is largely a disability of poor,^{7,8} old

people¹² and it is avoidable in about 80% of cases most of who are in developing countries.¹³ The major causes of blindness are cataract, refractive errors (RE), corneal blindness from trachoma and vitamin A deficiency (VAD), onchocerciasis, glaucoma and diabetic retinopathy (DR). These are either curable, or easily preventable with the appropriate treatment or treatable with some difficulty. Current knowledge and available technology have proven efficacy in the

treatment/prevention of 75% of these conditions that are curable/preventable¹⁴ (Table 1). Since the problem is solvable, these diseases are priority for V2020. Additionally, improvement in modern technology has reduced the cost of existing eye care services - for example, cataract surgery previously requiring 5 to 7 days hospitalisation, is now being done either as day-case or with 2 days' hospitalisation.

Table 1: Leading causes of blindness worldwide

Outcome of intervention	Curable/Treatable (Vision restored)	Preventable	Treatable with difficulty (to slow the progression to blindness)	Further research required
Causes of Blindness	Cataract, Refractive errors	Trachoma, Onchocerciasis, Vitamin A deficiency	Glaucoma, Diabetic retinopathy	Uveitis, Retinitis pigmentosa, Age-related macular degeneration, Others
Contribution to global blindness	60%	15%	15%	10%

The VISION 2020 plan – propped on 3 main components and through a concerted multiple partnership strategy - aims to enhance and intensify the existing measures and develop further means for *disease control* of the major causes of blindness, including childhood blindness, by the required skilful personnel trained through the *human resource development* (HRD) component of the programme. Additionally, ensuring the strengthening and equipping of the needed *infrastructure with appropriate technology*, and encouragement of *community participation* in order to urge people to take responsibility for their eye health as a group and ensure sustainability of eye care programmes.¹⁰ These diseases are set as priority because the emphasis is on equity with problem solving that is good for a large population, at the shortest possible time and at the lowest cost.⁹ The different diseases are tackled in different ways.

Disease control

Available information extrapolated from carefully conducted surveys of prevalence and causes of blindness^{6,11-13} indicate that cataract, the whitening of the natural clear lens in the eye, is responsible for about 20 million blind worldwide¹⁴ (about half of world blindness) mostly living in developing countries. It is a needless blindness. Vision is often restored by a straightforward skilful 30-minute operation using microsurgical techniques of removal

of the opaque lens and replacing it with an artificial intraocular lens (IOL), which can be done even before blindness occurs. Cataract surgery, according to World Bank studies, is the most cost-effective and gratifying of all surgeries.¹⁵ Economic advantages are seen in terms of return of patients to gainful employment, return of their young carers/guides back to school/jobs, and regaining of patients' socio-economic status. When large numbers are treated at the same time, there is the added advantage of adequate and cost-effective utilisation of resources (economics of scale). Thus, the strategy is geared towards creating demand and increasing the number of quality cataract surgeries with IOL implantation done per million population per year (cataract surgical rate, CSR) from the meagre 300 -1500 in developing countries¹⁶ to at least 3000.¹⁰ VISION 2020 will also address the issue of barriers to the uptake of cataract surgery which are noted to be largely linked to service providers,¹⁷ especially the cost of the service.¹⁸ Thus, free cataract surgery for the blind should be implemented in all regions. Most of these patients have long lost their economic productivity due to blindness and can ill-afford the cost of treatment. This will ensure that the cataract backlog is tackled and incident cases are immediately taken care of.

Refractive error (RE) was previously not recognised as a major blinding entity because previous blindness definition did not take into account the uncorrected presenting VA. Though data on

prevalence of blindness from RE are not readily available,^{14,19} it now features in blindness data, with wide variations of 15 to 30% of various regional blindness; some of which are from inadequate refractive correction of aphakia after cataract surgery. It is believed to be the 2nd leading cause of *treatable* blindness worldwide.^{19,20} Most of those affected, frequently unaware of their condition, have a presenting (uncorrected) VA <3/60. These patients can have functional vision restored with appropriate refraction and provision of spectacle lens correction.²⁰ It is a worthwhile venture requiring patience and skill. However, for a few of these patients, vision cannot be corrected with spectacles because of failure of normal visual maturation (amblyopia) associated with uncorrected refractive error since childhood,²¹ or posterior ocular pathology in high myopia. Myopia, a significant cause of visual impairment, was found to be uncorrected in 2/3 of secondary school students.²² School screening for RE is an integral part of V2020 control of RE.

Trachoma is a chronic infective blinding disease caused by the ocular serovar of the microorganism *Chlamydia trachomatis*. With an estimated 146 million people infected and 6 million blind worldwide, it is the leading cause of infectious blindness. The disease thrives in the shadow of poverty as it is (hyper) endemic in the poor communities of sub-Saharan Africa,²³⁻²⁶ South-east Asia, East Mediterranean region²⁷ and the indigenous Australians.²⁸ These areas are characterised by inadequate water supply and poor environmental sanitary conditions. Children with the active disease, being the reservoirs of infection, have repeated ocular inflammation from cycles of infection transmitted by direct contact, by flies, fomites and fingers. Scarring of the upper eyelid causes distortion of the lid (cicatricial entropion) with in-turning of the eyelashes (trichiasis) rubbing on the dry vulnerable cornea leading to corneal injury and infection and corneal opacity as an end stage of the disease, years after the initial infection.³⁰ Trachoma is also notable for causing long 'ocular misery' years which has an effect on socialization and economic productivity of affected individuals. Facilitated by WHO, Global Elimination of Trachoma (GET 2020) and the International Trachoma Initiative (ITI) adopted the "SAFE" strategy, a comprehensive control strategy to eliminate trachoma and its blinding effects.²⁷ It entails Surgery for trichiasis, antibiotic treatment against the microorganism, facial cleanliness to improve personal hygiene and Environmental sanitary control measures to break the cycle of transmission. This strategy has been successfully implemented with a positive impact in some communities.¹¹ The challenge for VISION 2020 includes the mapping out of trachoma affected areas²⁹ and implementing this promising strategy for GET. And the challenge for the trachoma control strategy no doubt remains with the intersectoral collaboration with the education,

community development and water and sanitation departments. This should be enhanced, as there have been questions about the SAFE strategy²⁷ as well as the need to provide the best available evidence for the impact of the environmental interventions on active trachoma.³⁰

Onchocerciasis is caused by the nematode *Onchocerca volvulus* which is transmitted by the black fly -*Simulium* species- breeding along fast-flowing rivers. Responsible for at least 270,000 blind,³¹ it causes irreversible blindness by affecting the optic nerve (optic atrophy), retina (chorioretinal atrophy) and the cornea (sclerosing keratitis). In some endemic areas, this river-blindness has forced farming communities to abandon their fertile river-side settlements for less arable lands.³² Fortunately, control measures instituted have led to the reduction of blindness from onchocerciasis and protected those at risk of blindness. The implementation of onchocerciasis control programme (OCP), one of the most successful and cost-effective healthcare intervention programmes³¹ and described as "the gold standard of partnership,"³³ is done by intersectoral and multi-disciplinary collaboration involving all cadres of healthcare personnel especially at the community level. Initially targeted at vector control by aerial spraying of insecticide, it subsequently included the Community Directed Treatment with Ivermectin (CDTI) - a drug against the microfilaria (larvae or *baby worms* of *O. volvulus*), donated free to the patients in endemic areas. The CDTI, done by community directed distributors (CDD), has achieved coverage of about 60% of its ultimate treatment goal (UTG) of 59 million people.³³ The role of V2020 is to coordinate and enhance the ongoing programme together with the African Programme for Onchocerciasis Control (APOC) and Onchocerciasis Elimination Programme in the Americas (OEPA) in order to achieve the UTG with ivermectin, and zero incidence of blindness from onchocerciasis.¹⁶ Through this community-based approach and functional integration of other primary healthcare activities, APOC has given the communities access to better healthcare overall.³⁴ Even with no doubt about the success of OCP/APOC, fears arise with the long-term sustainability and effectiveness of ivermectin in preventing visual acuity loss from onchocerciasis.³⁵ Thus, operational research and the search for drugs effective against the adult worm (macrofilaricide) should continue.

Blindness from vitamin A deficiency (VAD) - xerophthalmia - and its interplay with measles, malnutrition and use of traditional eye medicine (TEM) features as the major cause of childhood blindness. This burden is mainly in the developing countries of Africa and Asia, which constitute about 85% of world childhood blindness i.e. about 1.3 million blind children. When considering "blind-years" (the number blind times the years expected to live) childhood blindness is ranked 2nd to cataract as a

cause of visual disability. Its causes are associated with high mortality and are potentially avoidable.²¹ Thus, the issue is addressed through child survival strategy - The Global Child Survival Program - geared towards a sustained elimination of VAD through encouraging measles immunisation with piggy-back vitamin A supplementation for children and nutrition education for mothers.¹⁰ Longer-term measures explore the possibility of genetically modified food fortification with vitamin A being cultivated in these regions.³⁶ As blindness from VAD reduces through successful control programmes, congenital/developmental cataract emerges as a leading cause of childhood blindness.^{37,38} In the medium- and high-income countries, retinopathy of prematurity (ROP) and cortical visual impairment are the more prominent causes.³⁹ Thus, prevention of childhood blindness from surgically avoidable and treatable causes such as congenital cataract, glaucoma and ROP is also another priority for V2020.¹⁰ Cataract surgery in childhood poses a challenge - the postoperative management is taxing and the rate of postoperative complications is alarming.³⁸ As such, in addition to the earnest training of paediatric ophthalmic surgeons and their teams, expectations of outcome should be explained to the parents, giving a realistic measure of what can be delivered.

With the declining prevalence of blinding trachoma and a projected 6.7 million blind from glaucoma in 2000, available information indicate that glaucoma is emerging as the 2nd leading cause of blindness worldwide.⁴⁰ However, glaucoma surveys have varied widely and it has been difficult to provide standardised tools to adequately measure its impact as a visual disability.⁴⁰ Few blindness prevalence surveys include visual field-testing, with the likelihood of missing glaucoma cases where field loss often occur before acuity loss. It is generally perceived as a disease difficult to diagnose and treat before profound visual loss occurs. Nevertheless, together with diabetic retinopathy (DR) and age-related macular degeneration (ARMD), they are emerging as significant public health issues in countries that are not burdened with the V2020 priority diseases.^{4,9} They are issues for further research. The V2020 strategy is to ensure regular examination of individuals at risk, develop effective screening methods and promote awareness on visual loss. Additionally for DR, educate on diabetic metabolic control and provide retinal laser treatment.¹⁰

Though not given as much attention as the major blinding diseases, other blinding conditions such as leprosy, diseases of the retina, optic atrophy, uveitis and trauma are within the scope of V2020 as it is modelled to coordinate comprehensive eye care through existing health and eye care services.¹⁰ Despite data indicating that trauma is the most important cause of monocular visual loss and the cause of blindness in about 500,000 people in 1992⁴¹

and more recent estimates in 1.5 million people,⁶ V2020 fails to recognise it as a priority condition requiring specific attention for control. It is avoidable and requires enforcing preventive measures through legislation; training of personnel and equipping of hospitals to manage severe ocular wounds.

Human Resource Development

For efficient service delivery, purposeful and adequate training of all cadres of eye care personnel is essential. HRD is a core component of V2020 with emphasis placed on mid-level personnel at the community level with a primary healthcare (PHC) approach.⁴² Their job description and specific roles will vary from place to place depending on the prevailing needs. The role of the primary eye care (PEC) or community health worker (CHW), 1 per 5000 population, is to identify and treat simple eye diseases such as conjunctivitis; identify poor vision, cataract and other more serious eye diseases and refer; and the follow-up and evaluation of patients after treatment. In this regard, community participation is encouraged so that individuals can report red eyes and poor vision to health-workers; volunteer for training as PEC workers or CHWs and optimally utilise the available services.

The V2020 implementation is anchored at the community/district/local government level. Although fashioned as a comprehensive eye care service, the V2020 diseases are priorities at this level. Glaucoma will still be treated at this level and other diseases such as retinal detachment identified and referred. The required numbers of cataract surgeon or ophthalmologist, ophthalmic nurses (ON) or ophthalmic medical assistants (OMA) are shown in figure 2. Refractionists, either from the nursing cadre or optometrists, are also needed. Hospital managers and equipment technicians should be available in at least 50% of secondary and all tertiary facilities.¹⁰

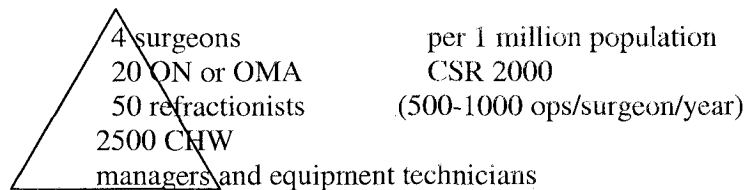
Regarding the targets for the control of childhood blindness, specially trained paediatric ophthalmic surgeons and nurses including anaesthetists are required. Here, the focus of eye care facilities is not only at the district/local government level but also at the tertiary level because childhood blindness is rarer and some patients require specialist care. The target required per population is 1 refractionist per 100,000; 1 low vision expert per 5 million, and 1 paediatric ophthalmologist per 10 million.²¹

At the tertiary level, the emphasis is on training for skills and efficient delivery of service; career development and focus on the task ahead. Training is for numbers and quality of the required personnel. Two-year diploma in ophthalmology programmes have already been instituted, ophthalmic nurses are being trained for trachoma trichiasis lid surgery, for refraction; and together with medical graduates, for cataract surgery. There is retraining of ophthalmologists for extracapsular cataract surgery with IOL implantation and instrument technicians

are developed for equipment maintenance/repair, low-cost spectacle production and eye drop preparation. Optometrists, traditionally in the private sector, are encouraged to join the V2020 programme. The Community Eye Health course (MSc CEH) at the London School of Hygiene and Tropical Medicine (LSHTM) has been re-fashioned to train towards V2020 implementation, International Council of

Ophthalmology is also restructuring towards that. For increase in awareness and information dissemination, the journal of Community Eye Health is distributed free to people in developing countries and the British journal of ophthalmology has pioneered a "world view" column dedicated entirely to issues of world blindness.

Figure 2: The team



Infrastructure and equipment development

To ensure the quality of outcomes of these disease intervention programmes, infrastructure and equipment development with appropriate technology is a prime component of V2020. The aim is to provide universal coverage and access to services for the preservation of vision and restoration of sight, ensuring social equity, capacity productivity and utilisation, and long term sustainability. Facilities are to be equipped according to the task at hand - for training and disease control. The reorientation is that of the consumer provider model whereby the patient as the consumer is motivated to accept the service which is of high quality given by personnel who have job satisfaction and self-esteem in an optimal environment with developed infrastructure and management system.¹⁰

In view of the dearth of appropriate technology in many parts of the world that carry the burden of avoidable blindness, V2020 aims to equip centres with the necessary facilities. Good quality appropriate affordable technology - operating microscopes, A-scan biometres, surgical consumables, equipment for spectacle and eye drops production, computers and educational materials are to be provided to hospitals that cannot otherwise afford. Production and local entrepreneurship are encouraged in order to reduce costs and enhance sustainability.¹⁰

Administrative structure for V2020 (Figure 3)¹¹

Looking at the magnitude of the problems of world blindness - economic, psychologic, social, etc - the task embarked upon by V2020 seems daunting. However, V2020 has laudable goals and given the historical role of WHO in blindness prevention programmes, it seems set to take the necessary steps to achieve these goals. While executing the projects in phases, to ensure feasibility of the programme, planning is done around a million population with the basic implementation at the district/community level.

The plan originates from the national/state level where a committee headed by a coordinator plays its role to set the policy, provide guidelines, provide the needed support and motivation, form coordination, ensure optimal use of resources, monitor and evaluate and take leadership responsibilities. The coordinator is also tasked with the job of advocacy.

The countries are grouped into 6 geographical regional coordinating groups with a chairperson each and co-chairs for sub-regions. E.g. the African region has 1 chairperson and 5 co-chairs for the 5 sub-regions of Anglophone West Africa, francophone West Africa, Central Africa, East Africa and South Africa. They help stimulate and facilitate a national programme.

The IAPB is the umbrella body that coordinates all the NGOs, academic and professional groups involved in blindness prevention (PBL). Both are in the task force - president of IAPB has the chair and a WHO/PBL person as secretary while the Chief Executive Officer is employed. They have the task of advocacy, resource mobilisation and equitable distribution to the 6 regions through the chairs but may directly support the district programme. The V2020 technical coordinator is a full-time post paid by the task force. There is also a full-time paid post in each of the six regions.

WHO/IAPB are the overseeing partners. At the global level, WHO sets the targets and formulates the policy to be communicated to the respective ministries/departments of health (MOH).

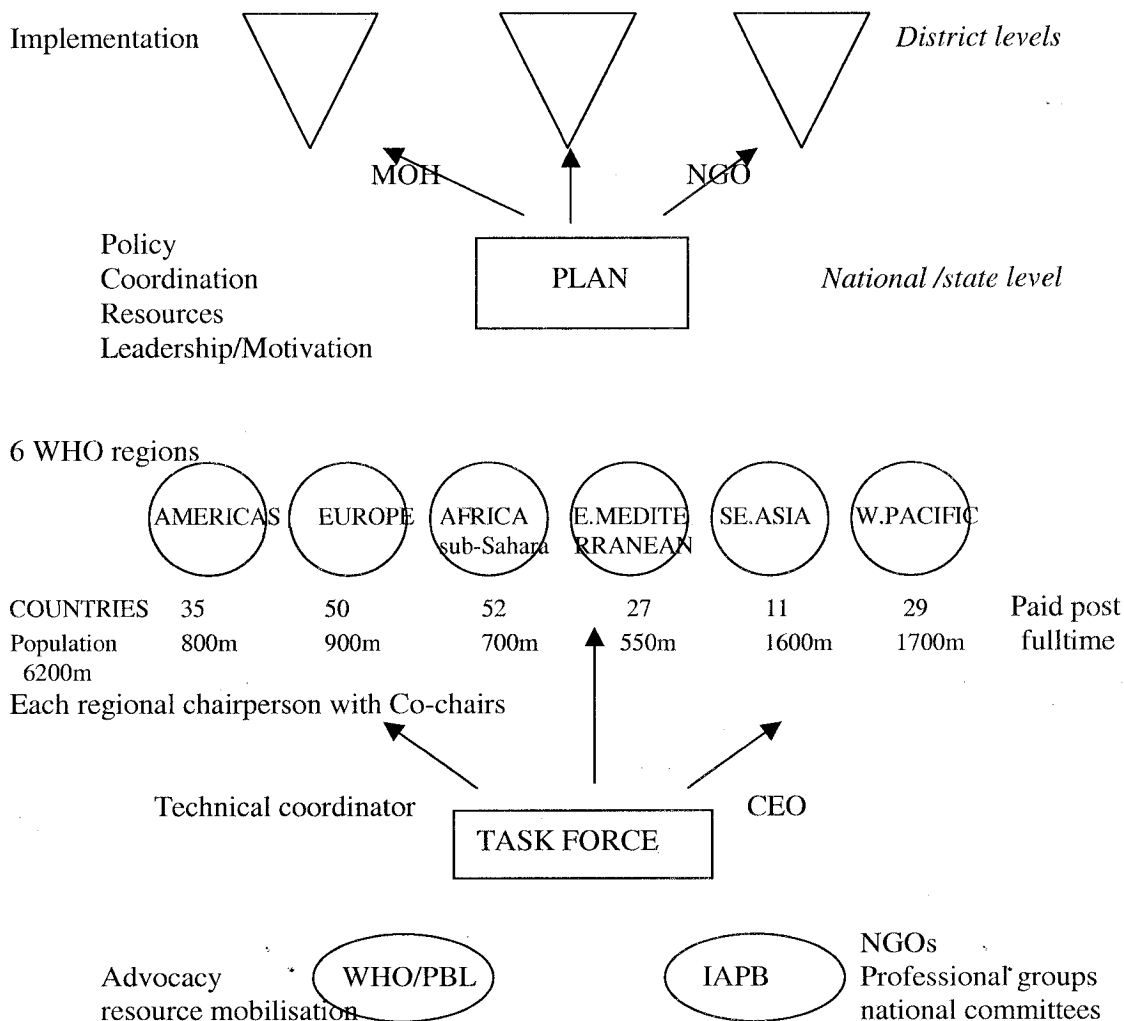
The issue of cost-recovery and sustainability goes beyond perceived benefits. It requires an extensive health systems research to see where funds can be obtained from within the eye care programme. Local NGOs must be encouraged and involved in the V2020 programmes - though without much funds for the operational aspects, they are ever willing to provide the needed service. Professionals in the lucrative fields of the business should have a sense of

moral/professional obligation to contribute to this initiative. Where there is a limited contract with donor partners, there should be a structured transition programme where it is clear that disengagement is going on. As avoidable blindness is associated with low socio-economic development, strategies for

control of blindness should not only include programmes for control of blindness but also concomitant economic development⁷ working in concert with wealth creation schemes (rather than poverty alleviation) for a sustainable impact.

Figure 3: The administrative structure of VISION 2020

COMMUNITY PARTICIPATION



It is envisaged that support at national level may be a problem in some countries with competing needs. We must identify such countries and initiate tactical advocacy while giving increased support. It must be emphasized that "(control of) blindness is not only imperative; it is also a financial and moral obligation of our times. The increasing evidence and magnitude of the problem, its impact on development, and its implications on poverty and deprivation, should compel governments to undertake this challenge."^{4,3}

In conclusion, it is worthy to note the unrelenting effort of the key players and partners of V2020 who must be commended for this noble initiative as they say "Our mission is to eliminate the main causes of blindness in order to give all people in the world, particularly the millions needlessly blind, the Right to Sight".⁹

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