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Editorial

An infrastructure model for the implementation of VISION 2020: The Right to Sight

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Blindness is a serious public health problem globally. Eighty percent of this problem is avoidable, i.e., either preventable or treatable; 90% of the problem manifests in the developing countries of the world. Over the past 30 years the magnitude of blindness has steadily increased, with southeast Asia carrying the greatest burden (disproportionate to the size of its population), followed by the western Pacific region, sub-Saharan Africa, Europe, Eastern Mediterranean and Latin American regions. The risk of blindness increases significantly with poverty and older age and in women.

In light of these observations, all the major groups and organisations involved in the prevention of blindness around the world realized that a major shift was warranted in the strategies to control blindness. This led to the development of the Global Initiative for the Elimination of Avoidable Blindness, given the name "VISION 2020: the Right to Sight." This is a joint programme of the World Health Organization, which represents the governments of the world, and the International Agency for the Prevention of Blindness, which represents the international nongovernmental development organisations, professional organizations, institutions and the corporate sector. The goal of this initiative is to control blindness and to reverse the present trend of increasing global blindness. The three strategic components of this programme are effective disease control aimed at controlling the major

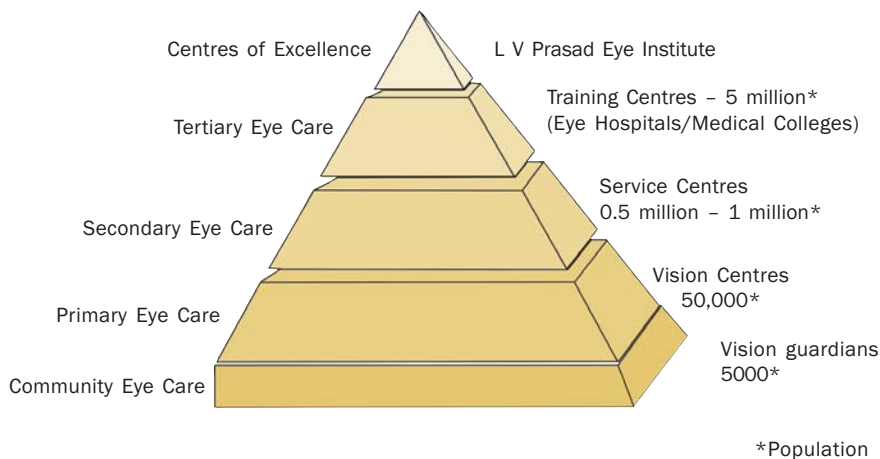
causes of blindness, human resource development, and development of infrastructure and appropriate technology. The three components must be developed in parallel to ensure the success of this program.

One of the major limiting factors in the combat against blindness in the developing countries is the lack of appropriate infrastructure for delivery of eye care. The proposed model envisages delivery of comprehensive eye care at all levels, namely, primary, secondary, tertiary and advanced tertiary, through a pyramidal structure.

At the base of the pyramid are vision centres, which are intended to deliver primary eye care to a population unit of 50,000. The functions at this level include screening of the communities to detect potentially blinding diseases, refraction and dispensing services, linkage with all community services and appropriate referrals, both horizontally and vertically. The problems that can be handled effectively at this level (in collaboration with other local primary health care organisations) are refractive errors, vitamin A deficiency, trachoma and onchocerciasis. Based on our experience, the initial capital investment required to set up such a centre is around US\$10,000 (20¢ per person). The staff required is a vision technician, a high school graduate who has undergone a year of special training. At the next level are service centres, whose main purpose is to provide predominantly secondary-level eye care,

including comprehensive diagnostic evaluation, cataract surgical services, other minor surgical procedures, low-vision services, community-based rehabilitation and an eye donation centre, for a population unit of 500,000. The initial investment for such a centre in the developing countries is US\$100,000 (20¢ per person). The staff required includes one or two ophthalmologists supported by a team of 25 to 30 people to cover medical, administrative and other support services. These centres may be district hospitals in the government sector, rural hospitals run by nongovernmental organisations or private hospitals. The idea is to integrate all sectors of eye care delivery to bring about a good public-private partnership for better coordination and more optimal use of available resources.

At the third tier in the pyramid are the training centres, one for each unit of 5 million people. The main functions at this level include secondary and basic tertiary eye care, good-quality residency training, training of all other ophthalmic personnel, low-vision and rehabilitation services, and appropriate clinical research. Essentially at this level the problems of cataract, glaucoma, diabetic retinopathy and corneal scar can be handled along with difficult cataracts and refractive errors. The dominant activity should be training of eye care personnel. The initial investment for the creation of such a centre is around US\$1 million (20¢ per person). This tertiary level could develop on the existing base of departments of ophthalmology in



medical schools and teaching hospitals as well as tertiary care hospitals in the voluntary and private sectors.

At the apex of the pyramid are centres of excellence, one for every 50 million people, with the functions of advanced tertiary care and new methods of treatment, training of trainers, appropriate clinical, laboratory, public health and operations research, advanced management training, low-vision rehabilitation and product development. In all these areas, service delivery, training and research will be emphasized. The total cost of each of these

units is around US\$10 million (20¢ per person). The centre of excellence will be staffed by the complete complement of eye care personnel to cover the entire gamut of functions, both medical and nonmedical. The total initial investment in setting up this pyramidal infrastructure is only 80¢ per person. With an additional cost of about 20¢ per person for the training needed to make this infrastructure functional, the total cost per person is just around US\$1. In most parts of the world, a sizeable portion of the required infrastructure already exists, and all that is required now is upgrading of

these facilities. The main additions will be in terms of focused training and upgrading the facilities.

All the various centres of excellence can then contribute to the development of national and regional programs where common functions, such as program planning, resource mobilization, development of curriculum for various training programs, distribution of education materials, development of systems and identification of appropriate research areas, can be tackled. This will eliminate unnecessary duplication and help avoid wasteful expenditure.

It is possible to create this model in most developing countries with appropriate local modifications. This then will provide the necessary framework for the creation of a sustainable eye care delivery system beyond the year 2020 so that everyone in the world has that fundamental Right to Sight.

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District Level Eye Care Delivery System

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Introduction

The last couple of decades have been witness to tremendous developments related to technology, infrastructure and service delivery in eye care globally, and India has not lagged behind. India can today boast of world class eye care services, research and teaching and training facilities, as also internationally acclaimed eye care professionals. However, in the not-too-distant past, such facilities were concentrated in metropolitan and large cities, and catered to a small percentage of affluent population residing in these cities; these facilities were not available easily to persons residing in rural and suburban areas, mainly due to their inaccessibility. Fortunately, in recent years, a few state capitals, industrial townships and some district headquarters have seen the establishment of state-of-the-art eye care centres.

Despite all these developments, quality eye care still remains beyond the reach of a majority of rural population. In most such areas, till recently, the mainstay of eye care service has been through surgical and screening eye camps. The quality of services provided through such camps has always been questionable. In order to provide quality services on a regular, permanent basis to the rural and suburban population, it becomes imperative to develop such facilities at the district level, where they can be accessed easily by the target beneficiaries. VISION 2020, the global initiative to tackle the problem of avoidable blindness by the year 2020, recommends that there should be a secondary level eye care centre for a population of approximately 1 million.

Methodology

Venu Eye Institute & Research Centre has been providing quality eye care service delivery for more than two decades, and in the past decade, has gained valuable experience in establishing district level secondary eye care centres in Uttar Pradesh, Haryana and Rajasthan, and in developing a successful three-tier system

of eye-care delivery. Through this system areas which earlier did not have such services/facilities have now been covered. What follows is a description of the processes adopted in this endeavor.

Site Identification and Selection

The first step is to identify the area where the service is needed; once a site (district) has been identified as needing service, a comprehensive situational analysis is done. To estimate the prevalence of blindness and assess its various causes, either of the following methodologies can be adopted:

1. A Rapid Assessment Survey
2. Referring to a previous survey in the same area or in an area similar to the one in question, and extrapolating its figures to arrive at a rough estimate
3. Organising a community-based eye care programme like a diagnostic/ screening camp or primary eye care centre or Vision Centre

The last of the above listed modalities can also help in assessing the level of existing eye care services in the area, their quality and their acceptance in the local population.

Community Based Services

Once the site has been selected and the problem identified, primary level community based eye care services are organized at various places in the target district. This helps in identifying the pockets of high need where these activities may be repeated; it also helps in identifying the most suitable place to later on establish the proposed secondary level centre.

Location of the Secondary Level Centre

The ideal location is one which is needy, accessible from all zones of the target district and adjoining areas, and is well connected through public transport system. Besides these, basic civic amenities like water and electricity supply should also be available.

Basic Infrastructure

Ideally, a district level secondary eye care centre should be a 30 to 40 bed facility equipped to provide basic ophthalmic OPD services and surgical facilities up to cataract extraction with intraocular lens (IOL) implantation. Besides tackling cataract, this centre would also provide diagnostic, therapeutic and surgical services for other common ocular conditions like glaucoma, entropion, pterygium etc., and would be suitably equipped to attend to all these problems efficiently. The support facilities in such a centre should include 24 hour power backup, round the clock water supply, hospital laundry and a hospital kitchen capable of catering to the patients and staff, an Optical Dispensing Unit and a Pharmacy. The centre should also have spacious and comfortable accommodation for the resident team of Surgeon(s), paramedics and support service personnel, besides (if feasible) a dedicated mobile unit vehicle for outreach activities.

The ideal situation is to have one's own building for such a centre, but this may not always be feasible. All attempts should be made to ultimately develop one's own infrastructure built according to own specifications, with potential for future expansion. If a local partnership is desired, one could partner with a like-minded NGO in the area, or a closely knit Trust with whom an MOU can be arrived at.

Community Participation and support

Any project designed to operate in a community at all levels can succeed only with local community involvement and support. The attempt to garner this support begins with the situational analysis. Community based activities like rehabilitation and eye donation programmes help enhance community

participation by sensitizing the community to the problems and needs of persons with disabilities, and helping in their mutual integration.

Network of Diagnostic Camps

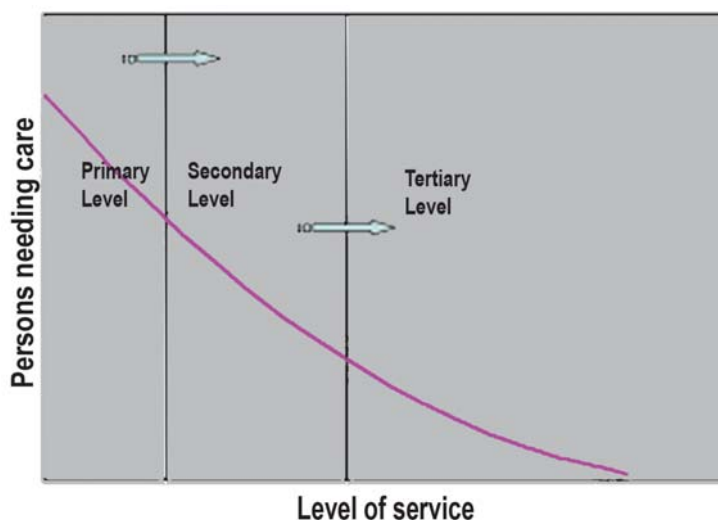
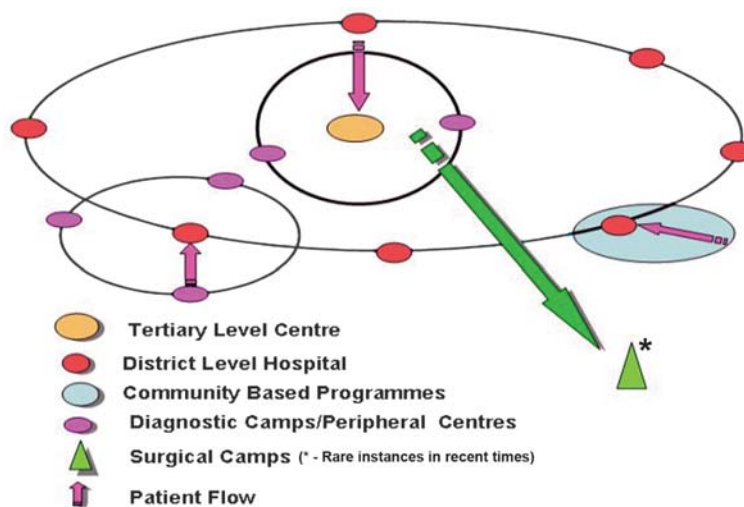
Once the district level centre becomes functional, besides providing the regular OPD, IPD and surgical facilities, community-based diagnostic camps are organized in a series of concentric circles, starting from a radius of 20 kilometers from the centre, and gradually fanning out to a maximum radius of about 45 to 50 kilometers. This helps not only to raise awareness about the centre and its facilities thereby increasing its utilisation by the target population, but also helps identify potential sites for developing primary eye care centres/Vision Centres. These peripheral centres, in addition to providing primary eye care services, also serve as focal points for post-operative care for surgical patients at their doorstep, thereby helping ease congestion at the hospital. As the centre develops, all its activities are regularly monitored for quality and viability; any primary/vision centre not proving viable is toned down to act as a screening camp and newer areas identified for additional centres.

How the Network develops further (Linkages)

Six to seven of such district level eye hospitals can be linked to a tertiary level referral hospital for super-specialty clinical and skill upgradation support. To each such district level hospital, 3-4 primary eye care/Vision centres are linked. Besides these primary level centres, a series of one day diagnostic/screening camps are regularly organised in a designated area around the hospital so as to cover a radius of 35 to 50 km. This kind of networking between primary and secondary levels is equipped to tackle 95% of the eye care related problems at the doorstep if the patient, who may need to approach the distant tertiary level centre only for 5% of his/her needs. Additional facilities listed below assist in increasing uptake of these services, while the schematic diagrams given below depict the network linkages and the beneficiaries at different levels of service delivery (Fig.).

Additional Facilities/Activities

Activities like community based rehabilitation, school screening programmes and eye donation centres not only aid in increasing acceptance of the



project in the target community, but also help in increasing awareness towards these issues and sensitize the community to the special needs of people with incurable disabilities. Multi-disability rehabilitation schemes are an add-on facility. Regular activities like public awareness talks for the local community and involvement of school children and NCC / NSS volunteers in such activities helps in facilitating the bonding between the project and the local community. Super specialty consultation for conditions related to low vision, corneal diseases, paediatric ophthalmic problems and diabetic eye diseases are initially provided in the district level centre at monthly intervals; the frequency of such super specialty clinics may be increased in a need based fashion.

Facility Upgradation

With passage of time, the need to add more diagnostic and therapeutic facilities is felt; these are added in due course of time, and include services like YAG laser unit, automated perimeters, vitrectomy units, etc. In due course, different such centres in contiguous (adjoining) districts may be identified for development as centres for super specialty care. As a matter of routine, such services are otherwise provided through the tertiary centre which has highly skilled, dedicated super specialists.



Outpatients in a District Level Hospital

Human Resources

Initially, because the workload is expected to be less, the human resources dedicated to the system would be less; two qualified ophthalmologists assisted by 2-3 paramedics, and support staff comprising a driver for the vehicle, a cook and housekeeping personnel are adequate. In initial stages, multiple roles are assigned to the paramedics and support staff. The team is augmented in a need-based manner as the workload increases.

Output and Outcome

This model of a district level eye care service delivery can achieve an output of

approximately 50-60,000 OPD patients and 2500 to 3000 surgeries annually. These figures are based on the assumption that at optimum utilization, surgeries per bed per year should be around 100, and a single ophthalmologist should be able to perform around 1500 or more surgeries annually.

Outcome of the eye care service delivery in such models is assessed in terms of post operative visual gain, measured as patients' post operative visual acuity at a specified point of time. Such medical audits are meant to be an integral part of this system, constantly monitoring the quality of services, and up grading the clinical processes and protocols.

Self Sustainability

Since these centres are situated in rural/suburban areas, a major chunk of the clientele is usually from the weaker socio-economic strata. This segment of the population would for obvious reasons find it difficult to afford the cost of treatment, and would be provided these services at subsidized rates or even free. Such a scenario casts a shadow over the sustainability of such a venture. However, from our experience, we have concluded that such a centre, despite treating 70% patients at subsidized rates/ free, usually breaks even financially within 3 to 5 years of its establishment as far as its running costs are concerned. Output wise, a secondary level eye care centre needs to perform 1500 to 2000 surgeries per annum to become self sustainable. In order to achieve this, one of the methodologies adopted is of cross subsidization; an example: if 25% surgical patients pay about USD 80 or more, another 50% pay subsidized price of approximately USD 22 and the rest pay nothing, even then the hospital achieves self sustainability within the time frame mentioned, after which the centre usually requires only capital grants for further service up gradation and development. Projects situated in remote areas may need 2-3 more years to achieve sustainability. Revenue generation through



Operation theatre in a district level hospital

activities like higher end surgical facilities like phacoemulsification for cataract, a pharmacy and optical dispensing units at secondary level hospital and Vision Centres help achieve sustainability.

Training Centres! The future . . .

On the job skill upgradation is necessary for development of such projects, as also for the morale and personal and professional growth of skilled personnel; providing these persons advanced trainings in various fields according to their attitude and aptitude results in such growth. Such centres later on also serve as training centres for both in house as well as external candidates in surgical skills, community based rehabilitation concepts and practices etc.

Conclusion

The methodology of establishing a district level eye care system connected to a tertiary referral centre has been successfully implemented by Venu Eye Institute & Research Centre in various districts of the Northern states mentioned earlier, and is replicable and reproducible almost everywhere. This system provides a cost effective methodology of providing quality eye care services at grassroots level, where they are required the most, that too at very affordable costs to the target population, or, quite frequently, even free of cost. At the same time, this system attains self sustainability within an acceptable time frame. These services then become *available, accessible, affordable and accountable*, the four A's important for any service delivery system.



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