

Aravind Eye Care System

Developing sustainable eye care.

BY R.D. RAVINDRAN, MD, AND R.D. THULASIRAJ



It gives me great pleasure to feature an article by R.D. Ravindran, MD, and R.D. Thulasiraj from the Aravind Hospital system in Tamilnadu, India, for *Cataract & Refractive Surgery Today's* Tackling World Blindness column. The Aravind Eye Hospital Model has proven to be one of the most effective programs for addressing the enormous backlog of blindness in India. Founded in Madurai by the charismatic Govindappa Venkataswamy, MD, who had a vision of providing quality cataract care to the masses of his country, the Aravind Hospital system has evolved into a world leader in eye care, ophthalmic education, and the development of appropriate technology for cost-effective surgery. In this piece, Dr. Ravindran and Mr. Thulasiraj share how the organization is now mentoring hospitals throughout the developing world.

—Geoffrey Tabin, MD, Section Editor

The Aravind Eye Care System was founded in 1976 as an 11-bed clinic in Madurai, a small town in Southern India. During the past 30 years, it has grown into a high-volume eye care provider that features a network of five hospitals with 3,400 beds, a world-renowned service-delivery model, a facility for manufacturing high-quality ophthalmic products at a low cost, and an institute for teaching and training. Today at Aravind, more than 240,000 surgeries are completed annually, accounting for 40% of the surgeries performed in Tamilnadu, India.¹ Moreover, an estimated 10% of all of the ophthalmologists practicing in India, Nepal, Bangladesh, and Indonesia have undergone training at Aravind.² The Gross Domestic Product in India grew 8% at the end of the first quarter of the year 2005.³ However, India's large population of poor, rural, and illiterate individuals has not benefited from this increase, and the divide between the haves and the have-nots continues to grow.

Aravind evolved out of the need for an eye care system that would be appropriate to and supported by the economic conditions in India. The system has successfully achieved full-cost recovery and sustainable high-quality care, allowing 70% of our services to be offered free of charge or at steeply subsidized rates.⁴ Resource utilization at Aravind is 80%, which far surpasses Vision 2020's global estimate of 25% for the resource utilization of eye care services,⁵ and this rate affords the system financial sustainability. To realize our vision, one of our strategies is to share our comprehensive structural model with eye care providers in regions with similarly developing

economies that stand to benefit from the implementation of such a system.

RESOURCE UTILIZATION AND FINANCIAL SUSTAINABILITY

One early obstacle we encountered in our efforts to provide the best possible cataract care equitably to all was the expense of IOLs. Although IOLs considerably improve visual outcomes and, consequently, patients' satisfaction, the lenses' high cost threatened Aravind's ability to provide them to patients from poorer socioeconomic groups. This situation led to the creation of AuroLab, a manufacturing facility that produces IOLs—and a host of other ophthalmic products such as sutures, blades, and pharmaceutical agents—at a fraction of their cost in the Western world.¹ We now produce PMMA lenses for \$4 to \$5 and foldable acrylic lenses for \$22 to \$24. As a result, the facility's surgical volume increased dramatically. We now manufacture 700,000 lenses per year. When phacoemulsification became popular among paying patients, Aravind was able to offer a less expensive, manual, sutureless, small-incision technique with similar advantages to nonpaying patients from the lower socioeconomic sections.^{6,7}

At Aravind, we have developed standardized protocols with regard to clinical procedures, administrative measures, and outreach activities.⁸⁻¹⁰ Trained paramedics carry out some of the more routine and repetitive tasks such as taking various measurements, conducting diagnostic tests, and preparing patients. As a result, the ophthalmologists can

concentrate on clinical and surgical care. Our OR system allows the surgeon to operate continuously, alternating between two tables. Ophthalmic assistants prepare patients and have the next one draped and ready on an adjacent table, all of which facilitates the surgeon's transition from one surgery to the next in minimal time.¹¹ An in-house instrument-maintenance program reduces any disruption of work due to malfunctioning equipment. The operational organization has enabled Aravind Eye Hospitals to host 4% to 5% of the ophthalmic procedures performed nationwide, although the facilities represent less than 1% of the country's ophthalmic manpower.¹² Having established our own protocols regarding the utilization of workers, we are now providing help for other hospitals in India and around the world so that they may improve their services and efficiency and provide high-quality care for the poor of their societies.

AN INSTITUTE FOR COMMUNITY OPHTHALMOLOGY

Background

The founders of Aravind strongly believe that sharing knowledge and transferring best practices through collaborative efforts is key to reaching the organization's goal of eliminating needless blindness. The development of skilled manpower oriented to the needs of a specific community is vital in this endeavor. The aim of our community approach is to improve the ocular health of the entire society. This conceptual framework laid the foundation for the Lions Aravind Institute for Community Ophthalmology (LAICO). It essentially translates to building

the capacity of eye care programs around the world, taking into consideration the underutilization of many of these facilities. Through a collaborative process, LAICO assists eye hospitals in improving the three broad dimensions described in the following sections.

Organizational Capacity Building

LAICO's faculty helps hospitals' leadership members build the overall capacity of their entire organizations by developing goals that match the need and opportunity for the delivery of eye care in their respective communities. In addition to devising strategies for meeting these goals through efficient and cost-effective systems, LAICO helps to establish concrete parameters to monitor activities and measure growth. To date, 201 eye hospitals worldwide have undergone the capacity-building process at LAICO.

Enhancing the Capacity for Patient Care

Once basic eye care services are sustainable, hospital administrators are encouraged to focus on areas of patient care, including productivity and training needs, and on specialty services such as diabetic retinopathy or pediatric ophthalmology. The LAICO model also supports the enhancement of systems, procedures, and protocols. Currently, 17 hospitals have undergone capacity building in specialty services.

Capacity Building in Human Resource Development

LAICO has created 35 structured training programs in various paramedical and management areas to build the human resources capacity to match the need and demand

TABLE 1. SOME OF THE COURSES HELD AT LAICO

Course	Duration
Vision Building Workshop	1 week
Capacity Building Workshop	1 week
Capacity Building in Diabetic Retinopathy	2 weeks
Capacity Building in Pediatric Ophthalmology	3 weeks
Management Priorities in Eye Care Delivery	1 week
Management Training for Eye Care Program Managers	2 weeks
Management Training and Systems Development for Hospital Administrators	6 weeks
Certificate Course on Instrument Maintenance—for Technicians	6 weeks
Certificate Course on Instrument Maintenance—for Ophthalmologists	5 days
Certificate Course on Community Outreach and Social Marketing of Eye Care Services	4 weeks
Postgraduate Diploma in Hospital Management	1 year
Fellowship in Eye Hospital Management	1 year

TABLE 2. CUMULATIVE CALCULATIONS ACHIEVED BY 40 PARTNER HOSPITALS 1 YEAR PRIOR TO AND 1 YEAR FOLLOWING LAICO'S INTERVENTION

Impact on:	Before	After	Increase
Total Cataract Surgeries	52,506	91,445	74%
Cost Recovery	71%	90%	27%
Surgeries Per Ophthalmologist	448	848	89%
Surgeries Per Bed	33	49	48%

of partnering eye hospitals (Table 1). In addition, LAICO has established training programs at our partner institutions in an effort to relieve ophthalmologists of some of the added workload caused by the lack of trained medical personnel. An optical-dispensing training program now exists in Dhaka, and instrument-maintenance training centers have been established in Vietnam, Nigeria, and Kenya.

THE COLLABORATIVE PROCESS

Hospitals that offer free or subsidized eye care often depend on a steady stream of monies from funding agencies and tend to set their targeted surgical volume according to how many patients they can afford to treat, rather than the actual need for various services. Our LAICO program helps build the needed capacity via a three-phased process. First, the LAICO representatives conduct a needs-assessment visit. Next, a multidisciplinary team from the hospital (composed of the chairman, the administrator, the chief ophthalmologist, and a senior paramedic) attends a 6-day workshop at LAICO to learn improved strategies for delivering care. The workshop provides an environment in which the team members can evolve a vision for their hospital and develop various strategies by which to translate this vision into a reality. Finally, after allowing the hospitals a period of 6 months to implement the new strategies, the LAICO team makes follow-up visits.

MAKING AN IMPACT

The positive results of LAICO's efforts to promote and cultivate community ophthalmic systems are clearly evident. Prior to LAICO's involvement, a hospital in Chitrakoot, a city in Northern India, averaged 20,000 to 25,000 surgeries per year. Ninety percent of these procedures were completed during a 3-month period, with the participation of many volunteer ophthalmologists and nurses. Non-IOL surgeries accounted for 70% to 80% of the cases. Since LAICO's input, the hospital averages 48,000 surgeries per year, all with IOLs. This 92% increase in total surgical volume was achieved without any extra major investment. Another hospital in

Blantyre, Malawi, showed an even more remarkable impact: a 142% increase in its surgical volume only 1 year after the capacity-building process was initiated. Table 2 shows the cumulative impact of the capacity-building exercises among 40 partner hospitals.

Over the past 30 years, the Aravind system has developed from a single hospital in Southern India into a leader in eye care delivery, education, ophthalmic product development, and international capacity building. For more information, please visit our Web site at <http://www.aravind.org>. ■

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