activity report

April 2021 to March 2022

ARAVIND EYE CARE SYSTEM

Vision: Eliminate needless blindness

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activity report

April 2021 to March 2022

Front Cover Image: Stone panel at Aravind-Chennai

In me the Spirit of immortal love
Stretches its arms out to embrace mankind
Imperfect is the joy not shared by all

from Dr. V's diary, February, 14, 1994

In me the spirit of immortal love
Stretches its arms out to embrace mankind.
Too far thy heavens for me from suffering men.
Imperfect is the joy not shared by all.

- Book XI, Canto I, 'Savitri, Sri Aurobindo

ARAVIND EYE CARE SYSTEM

Vision: Eliminate needless blindness..

EYE CARE SERVICES

. . by providing compassionate and quality eye care affordable to all

EDUCATION AND TRAINING

. . by developing ophthalmic human resources through teaching and training

RESEARCH

. . by providing evidence through research and evolving methods to translate existing evidence and knowledge into effective action

CONSULTANCY AND CAPACITY BUILDING

. . by enhancing eye care through capacity building, advocacy, research and publications

OPHTHALMIC SUPPLIES AND EQUIPMENT

. . by providing trusted and preferred eye care solutions to the world

EYE CARE SERVICES

ARAVIND EYE HOSPITALS

Tertiary Eye Care Centres - 7
(Speciality care, Research & Training)
Madurai 1976
Tirunelveli 1988
Coimbatore 1997
Pondicherry 2003
Salem 2011
Chennai 2017
Tirupati 2019

Secondary Eye Care Centres - 7
(Cataract services, Speciality diagnosis)
Theni 1985
Tirupur 2010
Dindigul 2010
Tuticorin 2012
Udumalpet 2012
Coimbatore City Centre 2014
Kovilpatti 2019

OUTREACH PROGRAMMES

Free Eye Camps

Community Eye Clinics - 6
(Out-patient eye care centres for comprehensive eye examination, treatment of minor ailments)
Melur 2004
Tirumangalam 2005
Cumbum 2008
Madurai City Centre 2009
Sankarankovil 2010
Pondicherry City Centre 2011

Vision Centres - 100
(Primary eye care centres for comprehensive eye examination)

ARAVIND INTEGRATED EYE BANK SERVICES

Madurai
Tirunelveli
Coimbatore
Pondicherry
Chennai

EDUCATION AND TRAINING

ARAVIND POSTGRADUATE INSTITUTE OF OPHTHALMOLOGY

LIONS ARAVIND INSTITUTE OF COMMUNITY OPHTHALMOLOGY (LAICO)

RESEARCH

ARAVIND MEDICAL RESEARCH FOUNDATION

DR. G. VENKATASWAMY EYE RESEARCH INSTITUTE

Basic and translational research
Clinical research
Operations research
Product development in eye care

CONSULTANCY AND CAPACITY BUILDING

LIONS ARAVIND INSTITUTE OF COMMUNITY OPHTHALMOLOGY (LAICO)

Sharing best practices of Aravind
Advocacy in eye care

OPHTHALMIC SUPPLIES AND EQUIPMENT

AUROLAB

Intraocular lens
Pharmaceuticals
Suture needles
Equipment
Surgical blades
Special products

Highlights

The year showed how with spirited determination, human-kind managed to control the disease caused by the corona virus and with resilience emerging out of the biggest health crisis the entire globe has faced so far. With the threat of COVID on the decline, there has been a steady increase in patient footfall at Aravind, especially for surgery, owing to the huge backlog of cases caused by the pandemic. As always, ensuring the safety of both the staff and patients was the topmost priority at Aravind. Apart from insisting on Covid-appropriate behaviour, necessary steps were taken to ensure that the staff across the system were vaccinated.

Setting new milestones

January 2022 marks 25 years since Aravind Eye Hospital, Coimbatore opened its doors to the public in 1997. Over the years, the hospital has evolved to become one of the premier eye care institutes in the north western part of Tamil Nadu and adjoining Kerala. An array of programmes and CMEs were conducted to celebrate the silver jubilee year. Aravind Eye Hospital, Pondicherry has stepped into its twentieth year of service in providing the gift of sight.

Aravind's primary eye care centres in rural and semi-urban areas, referred to as vision centres, ensure last-mile connectivity in eye care delivery. Today, these telemedicine-enabled vision centres handle close to 700,000 out-patient visits a year and over 85% of the cases are resolved locally, thus eliminating the need for the patient to travel to eye hospitals located in larger cities. Aravind model of primary eye care delivery attracted great interest amongst the ophthalmic fraternity and various governments in recent years and this model is being widely replicated. A significant milestone is that, this has grown into a network of hundred vision centres with the opening of nine more centres in the last year.

Since the opening of Aravind Eye Hospital at Dindigul in a rented building, in 2010, there has been a robust growth in patient volumes, year after year, creating an acute space crunch. Anticipating this, a plot of land had been purchased and a spacious, well-designed hospital is being built for providing better care and ambience to the patients and staff. This new facility is getting ready and will be opened in July 2022.

In memory of Dr. V

With the threat of COVID wave lurking, October Summit, the annual event held to commemorate

Dr. J. Martin Heur presenting the award to Dr. Narsing Rao at the Dr G. Venkataswamy Memorial Award ceremony

the birth anniversary of Dr. V was kept low-key. Dr. G. Venkataswamy Memorial Award and Oration ceremony was held online on October 1. Aravind Eye Care System honoured Dr. Narsing A Rao, Co-Director, Roski Eye Institute, Keck School of Medicine, University of Southern California, Los Angeles with the Dr.G.Venkataswamy Memorial Award 2021. The award was given in recognition of his contribution towards teaching, training and improving the quality and outcomes of uveitis care in Aravind and worldwide. Dr. Rao delivered the Dr.G.Venkataswamy Memorial Oration on 'Role of RPE in the modulation of intraocular inflammation, infection and lymphomas – Clinical implications'. Dr. J. Martin Heur, Chair, Ophthalmology Department, USC-Roski Eye Institute handed over the award and citation to Dr. Rao, on behalf of Aravind.

Aravind Centre for Eye Care innovations organised a symposium titled, "Masterminds – Innovations for a purpose", on October 29, as part of October Summit. The programme was hosted by Aravind-Pondicherry and the core aim was to promote and disseminate the culture of innovation to enhance patient-centred care in eye care. Another October Summit event was a webinar by LAICO to share the outcomes and rich insights from one of its learning collaboratives on establishing and strengthening community referral systems in the context of access restriction due to COVID. LAICO also launched the second batch of its collaborative series on 'Establishing and Strengthening Vision centres'.

Remembering Perumalda

It often happens that we fail to recognise the greatness of some individuals during their lifetime. Perumalda, a great artist was one such. With his exemplary artistic skills, he played a significant role in fashioning twenty-two images in the manuscript of the original Indian Constitution document. When Aravind inherited the precious treasure of his artworks, we decided to make the community aware of the life and works of the great soul. This idea culminated in a three-day exhibition of his artworks on his birth centenary in 2015.

In loving memory of Dr. Marilyn T. Miller

An accomplished clinician, a great teacher and an exemplary role model, Dr. Miller has touched the lives of generations of eye health providers and patients, particularly children around the world. Her association with Aravind started over 35 years ago. She was instrumental in establishing the paediatric eye care services at Aravind and has always been a constant support in developing this specialty to what it is today. Aravind has lost a mentor forever; her passing has left behind a void which can never be filled.

On the occasion of his 106th birth anniversary in August 2021, Aravind organised a workshop on drawing techniques which had eminent artists offering insights. A drawing competition was also conducted for staff across Aravind centres.

Art exhibition at the 'Remembering Perumalda' event

A unique friendship and a fitting tribute

Aravind's association with the eminent artist-writer, Mr. Manohar Devadoss started over a decade ago and blossomed into a unique friendship. He has always been a great supporter of Aravind and has instituted an endowment in memory of his late and beloved wife, Mahema to support people with low vision. Proceeds from the sales of his books and art works go to support low vision patients of Aravind to take up rehabilitation services. It was truly a gratifying moment for the organisation when the Postal Department, as part of observing National Postal Week, released a set of post cards on October 12, carrying Mano's intricate sketches that showed the great city of Madurai, its buildings and landscape in the 1950s.

Aravind-Chennai hosted an event to launch Mano's latest book, *Madras Inked...Impressions of an artist and an architect* on September 14. The book celebrates the rich culture and heritage of Chennai and has his drawings of various iconic buildings and landscapes in the city; appropriate texts penned by Ms. Sujatha Shankar, an eminent architect of Chennai accompany each drawing.

IT at Aravind taken to the next level

Leveraging information technology (IT) to its fullest potential has helped Aravind ensure efficient eye care delivery, better utilisation of resources and patient satisfaction as well as in evidence-based decision making. Established primarily to cater to in-house requirements, Aravind's IT department evolved over the years

Ms. Sujatha Shankar and Mr. Manohar Devadoss at the launch of 'Madras Inked...' at Aravind-Chennai

Release of post cards in honour of Mr. Manohar Devadoss

Inauguration of the new office of AuroiTech

and started sharing its products and solutions with other eye care providers. As the scale of activities and the staff increased, the IT department got its own identity as AuroiTech and it continues to develop and provide innovative eye care solutions and help keep Aravind at par with the global, technological world. As the gamut of eye care solutions that AuroiTech offers widened and the growing number of its external clients necessitated the department to enhance its capacity - staff competency and infrastructure. This long-felt need for a central office to manage the diverse IT operations got realised in January 2021 with the opening of a new facility on the third floor of LAICO building for AuroiTech.

Aravind - Novartis collaboration for a cause

The Novartis and AECS collaboration started in 2019 with MoU signed in March 2020, just as the pandemic really hit the world. The purpose behind this collaboration is to share inspiration and practices in leadership, culture transformation and talent management. Despite the pandemic, the partnership gained momentum and six work-streams emerged to focus on different areas of mutual growth:

(i) Community outreach: Eye health has been integrated into Novartis' Arogya Parivar programme that reaches out to rural communities to provide health education and referral services. This work stream has completed mapping of geographies with Aravind vision centres and developed health education material for eye care awareness. Health educators have been trained to use this material.

(ii) Leadership and talent development: This work stream created the Bridge Series - a platform for Aravind and Novartis leaders to share life lessons. The six bridge sessions held over the year discussed themes such as: Building a culture of excellence, leading through complexity and the purpose mind-set. This work-stream also conducted a round table discussion on "skilling for the future".

(iii) Capability building: This work-stream focuses on skill building and training. The focus areas include scientific writing for Aravind's clinicians and drug development for the staff of Aurolab.

(iv) Patient care excellence: This work-stream is developing a scalable clinical model to improve ease of timely access for retina and glaucoma patients. In addition, the team is working on creating Loop2 Learn to establish an ecosystem to integrate clinical care, research and academics for overall excellence in patient care.

(v) Data generation: The work-stream provides a platform for iNova to generate evidence on novel and innovative ideas to solve clinical unmet needs. Deep-dive discussions have helped to

create enhancements to Aravind's electronic medical record and create a glaucoma registry system.
(iv) Innovation: This work-stream is focused on improving case detection at vision centres for conditions such as for diabetic retinopathy, age-related macular degeneration and glaucoma.

Aravind team at Sitapur Eye Hospital during the launch of UP-SIGHT

Partnership to enhance eye care in Uttar Pradesh

As a major step to enhance eye care in the state of Uttar Pradesh over the next five years, Aravind Eye Care System has partnered with Sitapur Eye Hospital Trust (SEHT). The project aims to make Sitapur Eye Hospital (SEH) the major eye care provider of that region, as it was four decades ago. A beginning was made with the launch of UP-SIGHT on November 19 in the presence of senior leaders of both the organisations. This initiative aims to equip the SEH with the necessary systems and infrastructure in place to enable it to perform 50,000 surgeries by the end of 5 years and 100,000 by the year 2030. The project UP-SIGHT will fulfil the dreams of both the visionary leaders - Dr. M. P. Mehray, Founder, SEHT and Dr. G. Venkataswamy, Founder, AECS.

Pioneering research in eye care

Studies at Aravind Medical Research Foundation (AMRF) on the identification and validation of serum biomarkers for diabetic retinopathy have led to the identification of additional biomarkers, not reported earlier, which are predictive of onset of retinal complications among diabetes patients. This collaborative project has led to the validation of two of the markers, specific to the Indian population. The details of the study and its findings will appear soon in a reputed journal. The use of these predictive biomarkers in clinical settings will have a significant impact on the future management and treatment of diabetic retinopathy.

SUYAM - Total quality management

SUYAM, the total quality management (TQM) initiative of Aravind's central operations, gained momentum in the last year. A core committee was formed involving LAICO faculty and hospital administrators to facilitate the implementation of TQM practices. To start with, TQM practices have been implemented in 10 departments of Aravind Eye Hospital, Madurai and LAICO. As part of this, 5S methodology, employee suggestion system, Kaizen concepts are being regularly followed and

Mr. Gopalakrishna Rao during an audit of TQM practices at Aravind -Madurai

monitored. Plans are underway to extend this initiative to other departments and centres. The entire implementation is supported by an external consultant, Mr. Gopalakrishna Rao, who has vast experience in this field and retired as the Chief of Quality Assurance in TVS Rubbers - one of the leading industries in Madurai.

Aurolab completes three decades

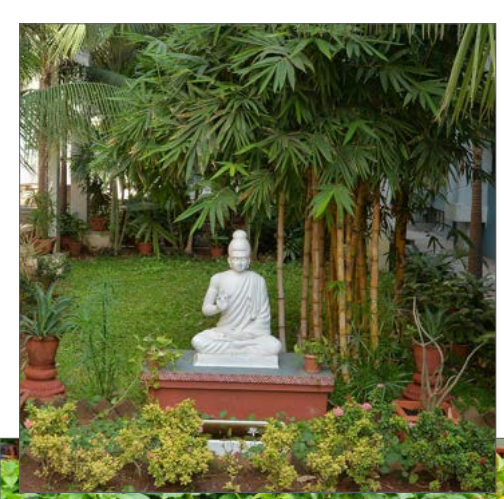
It has been three decades since Aravind established Aurolab to make high-quality eye care consumables easily accessible and affordable to developing economies. It is truly gratifying to see the company evolve over the years to gain a significant place in the global ophthalmology market, recognised for its quality, affordable price combined with good values and culture. Aurolab's Aurovue EV Toric lens launched two years ago was enhanced with a dual haptic design manufactured from a highly biocompatible hydrophobic material that provides exceptional rotational stability and adaptability to varying sizes of capsular bag.

Angaadi

Angaadi, the great charity fest was organised at Aravind-Tirunelveli and Madurai on October 29, 2021 and March 3, 2022 respectively. Both the events received good response from the staff. Proceeds from the events were utilised to support charities.

Garden fest

An interesting initiative by the central Housekeeping department during the last year was the conduct of garden fest across Aravind Eye Hospitals, that concluded on 8th January, 2022. The idea was primarily conceived by Dr. Natchiar to inculcate an interest in gardening as well as developing an appreciation to nature and its beauty. This initiative, the first-of-its-kind at Aravind received overwhelming response. It was truly a treat for the eyes, to see the beautifully arranged gardens in the hospitals and the well-maintained plants brought by staff members for the competition.






Glimpses from garden fest

Patient Care

The pandemic situation urged Aravind Eye Hospital to experiment with all possible means towards ensuring continuity of care while paying utmost attention to ensuring the well-being of both staff and patients. Tele-consultation was put in place during the critical days of the pandemic; scheduling system was introduced which helped manage the patient crowd. With all these safety measures in place, Aravind was able to win the trust of patients and the second half of the year saw a steady increase in the number of patients, month by month.

EYE HOSPITALS

Infrastructure Development

On February 14, Aravind Eye Hospital, Chennai expanded its out-patient services to the second floor opening four clinics dedicated exclusively to handle retina, glaucoma and paediatric cases. The new spacious Retina and Vitreous Department is all set to see about 600-700 patients a day including those coming in for retinal laser procedures. The department can also handle about 100 patients requiring intravitreal injections. The new Glaucoma Department can now see up to 500 patients including those coming in for glaucoma-related laser procedures. The new Paediatric Ophthalmology Department with its child-friendly ambience can cater to around 300 patients and patients with squint-related problems on a daily basis. The floor is self-sufficient with registration counters, pharmacy, optical shop and cafeteria. Apart from these, an eye bank and an ocular prosthesis unit were also inaugurated.

At Aravind-Tirupati, Aarogyasri, Andhra Pradesh Chief Minister's free health care scheme was inaugurated on April 1. An exclusive Cornea Clinic was inaugurated on July 21.

Inauguration of 'Aarogyasri' at Aravind-Tirupati

With the patient numbers growing year after year, it became imperative for Aravind-Tirunelveli to relocate its out-patient services and operation theatres to a new building. Construction of this new facility is underway and is expected to finish by October 2022. Along with this, housing facility for the staff is also coming up in the same premises. Similarly at Aravind-Coimbatore, the regulatory authorities have finally given approval for the new building and construction work has begun.

Aravind team and guests at the inauguration of the out-patient services in the second floor of Aravind-Chennai

Awareness exhibition on RoP on the occasion of World Prematurity Day at Aravind-Theni

at Aravind-Madurai

Aravind Eye Hospital, Dindigul is all set to move to a new, spacious facility in July 2022. The new hospital has a built up area of 46,000sq.ft and will continue to provide cataract services and speciality diagnoses.

RoP screening programme strengthened

In India, it is estimated that 20 - 52% of pre-term babies have Retinopathy of Prematurity (RoP). RoP is an eye disorder caused by abnormal growth of blood vessels in pre-term babies and is a condition in which there is only a very narrow window of opportunity to save vision. If not treated within the first month of birth, chances are high for permanent vision loss. Aravind centres at Madurai, Coimbatore, Tirunelveli, Salem, Chennai and Tirupati in collaboration with various hospitals and NICUs have been identifying babies with RoP using telemedicine platform and providing the necessary intervention. This programme was further strengthened at Aravind-Coimbatore, Pondicherry and Tirupati with the support of a generous grant from USAID. Aravind centres together screened 15,781 babies (new and review) of which 121 were provided with lasers and 142 were given injections; two babies underwent surgery.

Awareness exhibition on RoP at Aravind-Coimbatore

Aravind-Coimbatore also received a grant from Seva Foundation to test ROP telescreening using low cost cameras employing artificial intelligence. Clinical images taken using different cameras are being compared.

Use of Artificial Intelligence in detecting eye diseases

Artificial Intelligence (AI) is emerging as a major tool in diagnosing eye diseases. Aravind-Pondicherry in collaboration with Remidio Innovative Solutions, Bangalore, India work on developing an AI tool for early detection of glaucoma and diabetic retinopathy using a smartphone based, slit lamp mounted fundus-on-phone (FOP) camera. The project is titled, Medios AI and is funded by Remidio and Aravind -Pondicherry. The project aims to train the new AI to pick up glaucoma/ disc suspects or diabetic retinopathy cases from the fundus images captured in the vision centres of Aravind - Pondicherry. This will reduce doctor's workload and patients' unnecessary travel expenditure, yet guide them towards the right treatment. To educate, encourage and convey the purpose of the project, the project department, Aravind-Pondicherry conducted a training session for the staff of its 14 vision centres on December 19.

Making the life of the visually challenged 'Smart'

AI driven smart vision spectacles incorporated with features like navigation, face recognition and text reading will now help people with visual impairment lead an independent life. This was developed by Smart Health Global (SHG) Technologies with support from Vision Aid and iterative inputs and validation from Aravind. Aravind Eye Care System in collaboration with Rotary Club introduced this device which is the

PERFORMANCE APRIL 2021 - MARCH 2022

OUT-PATIENT VISITS - 4,356,791

Madurai
Dindigul
Theni
Tirunelveli
Tuticorin, Kovilpatti
Coimbatore
Tirupur, Udumalpet
City Centre
Pondicherry
Salem
Chennai
Tirupati

SURGERIES, LASERS PROCEDURE & INJECTIONS - 524, 672

Performance of secondary centres are shown along with the tertiary hospitals that manage them.

	Total	Madurai
OUT-PATIENT VISITS		
HOSPITALS		
Paying Sections	**2,378,978**	5,54,228
Free Sections	**801,848**	209,742
OUTREACH		
SCREENING CAMPS		
Comprehensive camps	**195,749**	44,860
Diabetic Retinopathy screening camps	**11,956**	5,156
Workplace refraction camps	**19,431**	4,841
School children examined by Aravind staff*	**17,694**	148
Paediatric eye screening	**-**	-
Mobile van refraction camps	**14,222**	-
RoP-No. of babies screened in NICUs	**17,762**	2,905
TOTAL FROM SCREENING CAMPS*	**276,814**	57,910
VISION CENTRES	**720,083**	254,888
COMMUNITY EYE CLINICS & CITY CENTRES	**179,068**	96,727
TOTAL OUT-PATIENT VISITS	**4,356,791**	1,173,495
SURGERIES, LASER PROCEDURES & INJECTIONS		
Paying Sections	**288,480**	79,878
Subsidised (walk-ins to the free hospital)	**181,087**	49,688
Free (through screening camps)	**55,105**	13,101
TOTAL SURGERIES	**524,672**	142,667

**While Aravind team screened 17,694 school children, an additional 25,370 children*

SURGERIES

	Total	Madurai
Cataract surgeries	**327,128**	83,421
Trab and combined procedures	**5,609**	1,466
Retina and Vitreous surgeries	**19,642**	7,172
Squint correction	**1,815**	648
Keratoplasty (Incl. Graft procedures, Keratotomies, DSAEK)	**1,655**	641
Pterygium surgery	**7,154**	2,050
Ocular injuries	**195**	70
Lacrimal surgeries	**3,851**	1,893
Orbit and Oculoplasty surgeries	**2,624**	1,869
Refractive laser procedures	**8,721**	1,818
Retinal laser procedures	**47,595**	12,044
YAG laser procedures	**44,743**	15,036
Intravitreal injections (Anti VEGF & Steroids)	**32,469**	8,893
Other surgeries, Laser procedures & Injections	**21,492**	5,646
TOTAL SURGERIES	**524,672**	142,667

Dindigul	Theni	Tirunelveli	Tuticorin	Kovilpatti	Coimbatore	Tirupur	Udumalpet	CBE CC	Pondicherry	Salem	Chennai	Tirupati
80,569	91,164	300,315	59,389	31,785	301,566	54,812	48,566	40,831	269,887	124,262	292,972	128,632
-	27,337	71,434	11,688	7,465	105,479	18,847	22,325	-	98,596	38,935	95,317	94,683
-	9,558	19,859	2,409	-	44,912	4,181	2,726	-	36,752	6,266	19,346	4,880
-	279	786	-	-	5,026	-	-	-	-	709	-	-
-	1,138	5,331	-	-	3,786	330	-	-	1,693	1,588	579	145
-	-	174	-	-	12,077	-	-	-	1,987	550	1,180	1,578
-	-	-	-	-	-	-	-	-	-	-	-	-
-	117	-	-	-	8,210	-	-	-	-	5,895	-	-
-	1,881	3,897	-	-	7,370	-	-	-	496	-	1,136	77
-	12,973	30,047	2,409	-	81,381	4,511	2,726	-	40,928	15,008	22,241	6,680
-	66,509	154,726	-	-	53,978	13,194	16,855	-	129,759	19,312	10,862	-
-	23,857	29,075	-	-	-	-	-	-	29,409	-	-	-
80,569	221,840	585,597	73,486	39,250	5,42,404	91,364	90,472	40,831	568,579	197,517	421,392	229,995
5,613	9,571	36,371	3,469	1943	43,739	3,983	4,190	3,123	37,962	13,246	34,221	11,171
1,434	5,032	15,911	2,018	1463	26,501	3,179	5,266	-	24,717	8,524	18,480	18,874
-	1,605	5,860	302	0	18,172	826	617	-	7,372	1,561	4,261	1,428
7,047	16,208	58,142	5,789	3,406	88,412	7,988	10,073	3,123	70,051	23,331	56,962	31,473

were screened by teachers/vision screeners and found to be normal. This takes the total outreach screening to 302,784.

Dindigul	Theni	Tirunelveli	Tuticorin	Kovilpatti	Coimbatore	Tirupur	Udumalpet	CBE CC	Pondicherry	Salem	Chennai	Tirupati
5,710	11,036	35,015	4,801	2,685	51,348	6,907	9,078	2,052	43,002	17,060	33,914	21,099
1	10	1,125	-	-	998	29	16	21	936	121	531	355
-	3	1,964	-	-	4,520	-	-	-	2,781	571	1,828	803
-	-	198	-	-	691	-	-	-	119	-	103	56
-	-	204	-	-	397	-	-	-	217	35	108	53
78	275	505	8	22	886	136	60	54	1,003	188	927	962
-	-	24	-	-	36	-	-	-	19	14	15	17
-	16	349	-	-	594	-	-	-	559	1	273	166
-	124	89	-	1	79	-	-	-	114	3	143	202
-	-	960	-	-	1,770	-	-	-	1,801	186	1,919	267
-	1,800	7,306	-	-	8,620	-	-	-	7,289	1,366	6,505	2,665
1,206	1,795	4,488	889	650	5,295	798	830	757	4,237	1,893	4,737	2,132
-	916	3,140	-	-	7,304	-	-	183	5,248	1,319	3,697	1,769
52	233	2,775	91	48	5,874	118	89	56	2,726	574	2,262	927
7,047	16,208	58,142	5,789	3,406	88,412	7,988	10,073	3,123	70,051	23,331	56,962	31,473

Patient with low vision trying out the smart vision spectacles

At the launch of project Drishti

first indigenous product of its kind in the country at a function organised at LAICO on August 16. Five visually impaired persons received the smart vision spectacles free of cost at the function.

At Aravind-Chennai, Rotary Club of Madras East launched "Project Drishti" on September 17, to donate Smart Vision spectacles to 300 eligible beneficiaries. At the launch, a total of 17 visually impaired persons received Smart Vision spectacles free of cost. Aravind-Madurai in collaboration with the NGOs, Vision Aid and Trees for Life has embarked on a project to distribute smartphones to visually impaired students and job-seekers from underprivileged communities. The smartphone will be beneficial for students to undergo online classes and for job-seekers, it will help in better networking and easy correspondences to find a placement. At a function held at Aravind-Madurai on January 4, smartphones were distributed to ten deserving visually impaired persons. These beneficiaries were trained on the efficient use of smartphone using assistive mobile apps to overcome the challenges they face in day-to-day life. An online training session by the Hadley Institute for the Blind and Visually Impaired, Illinois, USA was also arranged to familiarise them on the usage of smart phones.

Virtual audit of NABH standards at Aravind-Madurai

Quality at every step of care delivery

At Aravind, conscious efforts are taken to ensure patient safety and quality at every stage of care delivery. The existing online form to report incidents and near-misses was revamped incorporating new features to facilitate easy data retrieval and compilation. Dedicated Quality Assurance teams have been formed involving staff from all hospitals, addressing various domains of quality. The teams meet periodically to analyze the performance of all the domains, based on identified parameters and implement steps for improvement. Aravind hospitals have renewed their NABH certification in seven of the twelve hospitals. Standard treatment guidelines are being refined to ensure uniform treatment to all patients and enhance clinical delivery. Staff involved in direct patient care are periodically sensitised on the importance of standard operating procedures in order to achieve quality and thereby ensuring patient satisfaction. The central quality team regularly organises training programs to orient the staff on the auditing practices.

Training for paramedics are being organised regularly to orient them on the NABH standards and to implement these in their respective departments.

Projects to enhance eye care service delivery

Comprehensive centre for correcting facial deformities

Aravind Eye Hospital, Chennai, in collaboration with a faciomaxillary surgeon and a multispeciality hospital, has embarked on a project to provide affordable surgical care for post traumatic orbital fractures which can be vision threatening. A total of 13 patients underwent surgery during April 2021-March 2022. Patients with congenital facial deformities which can be life threatening in paediatric groups are also treated under this project.

Ensuring quality of life in women through presbyopia correction

Through the project supported by Standard Chartered Bank-Global Business Services (SCB-GBS), Aravind-Coimbatore studies the impact of presbyopia correction on the quality of life in women. The project aims to screen about 25,000 women above 40 years of age. A total of 54 camps were conducted during April 2021 to March 22; over 6,501 women were examined and 1,879 received spectacles free of cost. Over 24 follow-up camps were conducted to assess the quality of life of these women following spectacle usage. The data is being analysed.

Improving adherence to follow-up in childhood glaucoma

The objective of the USAID-supported project is to improve management of childhood glaucoma by understanding the context of the caregivers of children with the disease. 140 children diagnosed with glaucoma were chosen to study the predictors and barriers of adherence to long-term follow up. To encourage adherence to follow-up, the project supports travel expenses for patients and their attenders. At Aravind-Madurai, a total of 67 children were enrolled into the project.

Ensuring holistic paediatric eye care

The project titled, Systematic paediatric eye care through sibling screening strategies (SPECSSS) is being implemented at Aravind-Tirunelveli and is supported by Seva Foundation, USA. It aims to make paediatric eye care holistic by screening siblings of children with heritable disorders visiting the hospital, its secondary eye care centres and vision centres. This two-year project was started in April 2021. During April 2021 to March 2022, 1,744 siblings were screened and 656 were found to have eye problems. Glasses were given for 74 children and surgeries were performed on 21 children, free of cost.

Truck drivers eye screening initiative

To address eye and ear issues prevalent among the truck drivers, Driver Care Programme is being implemented by Eicher Group Foundation EGF and Dr Shroff's Charity Eye Hospital (SCEH) across the country. Aravind Eye Hospital, Salem is one of the partners of this project in the south zone. With the help of a mobile van sponsored by Eicher, a team consisting of a technician and counsellors from Aravind-Salem performs eye examination for drivers. During April 2021 to March, 2022, 61 mobile camps were conducted; 5,895 people were screened of which 2,676 were truck drivers.

Household survey of children with childhood glaucoma by Aravind-Madurai

Truck drivers eye screening programme at Aravind-Salem

2,639 identified with refractive errors; 1221 spectacles were given, 323 cataract surgeries were done.

Providing optimal care for economically disadvantaged people with ocular trauma

The project anchored by Aravind-Madurai and supported by SCB-GBS aims at supporting 600 patients with ocular trauma and belonging to low socioeconomic status. The project fund supports the cost of investigations, medication, travel and surgery. During April 2021 to March 2022, 171 patients were benefitted.

Focus to eliminate childhood blindness due to cataract in South India

The project supported by USAID at Aravind-Coimbatore targets to train 1,380 health care providers to screen 650,000 children for early identification of cataract, timely referral, evaluation and surgery; and to improve surgical competency of paediatric ophthalmologists. It also aims to educate general ophthalmologists on follow up and rehabilitation. In the last year, 1,385 health care providers were trained. They have screened 175,192 children.

Eye care awareness through patient education

Since inception, promoting eye care awareness through patient education has been a priority at Aravind. Now, a central team consisting of staff from all hospitals has been formed. This ensures standardization of the awareness material across all Aravind centres. Working with the clinical staff, the communications team makes use of every opportunity to promote eye care awareness amongst the public. Various innovative strategies were tried to reach out to wider communities and most of their awareness materials were well-received by the public and widely shared. The team did extensive campaigns making use of videos and text messages to urge people to take care of their eyes.

Amblyopia Day, Aravind-Pondicherry

Children's Day, Aravind-Madurai

World Glaucoma Week, Aravind-Chennai

World Diabetes Day, Aravind-Salem

World Sight Day, Aravind-Tirunelveli

Community Outreach

From the early years, Aravind has reached out to the community through free eye camps. Since then, Aravind has set up Community eye clinics, city centres and Vision centres, as permanent eye care facilities to be easily accessed by urban and rural patients alike. Today, there are four community eye clinics and two city centres that offer out-patient care and a hundred vision centres that offer telemedicine-enabled primary eye care.

Training programme for technicians of vision centres at Aravind-Tirunelveli

Free eye camps

Free eye camps gained momentum during April to December 2021 and thereafter intermittent lockdown and associated restrictions in view of the rising number of Covid cases posed a great challenge for their routine conduct. During April 2021 to March 2022, a total of 1,242 camps were conducted. A total of 276,814 patients (including babies examined for ROP) were screened; 55,105 patients underwent surgery.

Annual planning meeting

The annual planning meeting of the staff of outreach departments across Aravind centres was held on January 7 and 8. Performance through the year was analysed and the goals and strategies were redefined.

Community Eye Clinics and City Centres

During April 2021 to March 2022, four community eye clinics and two city centres together handled 179,068 patient visits.

Vision Centres

While it took time for Aravind Eye Hospitals to reach their full operational capacity in view of the pandemic, vision centres were quick to spring back in action. Aravind opened nine vision centres during April 2021 to March 2022, the highest ever for a year. The year also witnessed the much-awaited milestone - opening of the 100th vision centre. Together, they handled 720,083 outpatient visits, in the last year.

Taking eye care to the rural masses

Vision centres play a great role in taking eye care to the rural masses. As a new initiative, these centres

Eye care awareness programme organised by Kannivadi vision centre

Workshop at Aravind-Salem for the staff of its vision centres

have started proactively reaching out to the rural communities and organised awareness sessions to educate people about eye care. Free eye examination was also done at these programmes.

Capacity building of vision centre staff

Over 90% of the cases that the vision centres handle are resolved locally, thereby eliminating the need for patients to visit a tertiary centre in the cities. Training programmes were regularly conducted to ensure that the paramedics who run these centres are well- updated and deliver services efficiently.

Support to establish vision centres

Under the Millennium Alliance Project, four hospitals were chosen to get mentored closely to set up and run telemedicine-enabled vision centres successfully in their location. Kisii Eye Hospital, Kisii, Kenya; City Eye Hospital, Nairobi, Kenya; Deep Eye Care Foundation and Grameen Eye Hospitals from Bangladesh are the selected ones. Aravind offers continuous mentoring and technical support to these hospitals and they are expected to open at least one vision centre during the mentorship period of 18 months. Aravind will provide the necessary resource materials, equipment, layout and plan, software for documentation and also train the staff on teleconsultation. A consultant will also visit these sites to provide further support.

Annual meeting of vision centre staff

Aravind-Pondicherry organised a meeting of the staff of its 14 vision centres on February 27. The meeting analysed the performance of the centres followed by an active discussion to improve their services.

Vision centres inaugurated during April 2021 to March 2022

Sholavaram (July 22, 2021)


Puzhal (July 22, 2021)


Viralimalai (August 18, 2021)


Senthamangalam (October 29, 2021)


Pochampalli (March 30, 2022)


Manalurpettai (March 30, 2022)


Sayalkudi (March 31, 2022)


Madahavaram (March 31, 2022)


Korukkupettai (March 31, 2022)

Outreach Performance

	Total	Madurai	Theni	Tirunelveli	Coimbatore	Pondicherry	Tirupur	Salem	Tuticorin	Udumalpet	Chennai	Tirupati
FREE EYE CAMPS												
Comprehensive Eye Camps												
Camps	**881**	166	60	131	196	128	22	34	15	26	79	24
Patients examined	**1,95,749**	44,860	9,558	19,859	44,912	36,752	4,181	6,266	2,409	2,726	19,346	4,880
Glasses prescribed	**40,951**	7,278	2,413	4,462	7,236	7,912	1,505	1,544	726	593	6,235	1,047
Glasses delivered	**35,917**	6,961	2,284	3,888	6,534	6,645	1,299	1,310	641	400	5,029	926
Glasses dispensed on the spot	**30,259**	6,250	1,630	3,128	6,219	5,444	979	819	386	307	4,381	716
Diabetic Retinopathy Screening Camps												
Camps	**94**	23	6	8	46	-	-	11	-	-	-	-
Patients examined	**11,956**	5,156	279	786	5,026	-	-	709	-	-	-	-
Diabetics screened	**5,455**	2,656	279	326	2,002	-	-	192	-	-	-	-
DR Patients screened	**617**	292	46	60	186	-	-	33	-	-	-	
Refraction Camps												
Camps	**95**	21	5	31	11	15	3	6	-	-	2	1
Patients examined	**19,431**	4,841	1,138	5,331	3,786	1,693	330	1,588	-	-	579	145
Glasses prescribed	**6,705**	1,521	683	1,728	1,000	747	73	591	-	-	284	78
Glasses delivered	**5,920**	1,487	671	1,550	843	490	55	524	-	-	222	78
On the spot deliveries	**4,000**	1,282	452	1,186	285	416	32	203	-	-	95	49
Refraction Camps by Mobile Unit												
Camps	**111**	-	2	-	48	-	-	61	-	-	-	-
Patients examined	**14,222**	-	117	-	8,210	-	-	5,895	-	-	-	-
Glasses prescribed	**3,658**	-	16	-	2,152	-	-	1,490	-	-	-	-
Glasses delivered	**3,152**	-	16	-	1,915	-	-	1,221	-	-	-	-
Eye Screening of School Children-Base Hospital												
Schools served	**56**	1	-	3	31	4	-	3	-	-	3	11
Camps	**60**	1	-	3	28	6	-	3	-	-	6	13
Teachers trained	**567**	25	-	48	-	129	-	52	-	-	106	207
Total children in school	**42,662**	1,170	-	2,865	16,878	5,000	-	4,300	-	-	4,233	8,216
Children screened by oph.	**17,319**	148	-	174	11,702	1,987	-	550	-	-	1,180	1,578
Children received glasses	**1,556**	52	-	60	494	111	-	165	-	-	324	350
Children identified with eye defects other than Refractive Error	**773**	20	-	86	336	56	-	16	-	-	50	209
Eye Screening of School Children-Vision Centres												
Schools served	**1**	-	-	-	1	-	-	-	-	-	-	-
Camps	**1**	-	-	-	1	-	-	-	-	-	-	-
Teachers trained	**-**	-	-	-	-	-	-	-	-	-	-	-
Total children in school	**402**	-	-	-	402	-	-	-	-	-	-	-
Children screened by oph.	**375**	-	-	-	375	-	-	-	-	-	-	-
Children received glasses	**8**	-	-	-	8	-	-	-	-	-	-	-
Children identified with eye defects other than Refractive Error	**8**	-	-	-	8	-	-	-	-	-	-	-
Paediatric Eye Screening Camps												
Camps	**-**	-	-	-	-	-	-	-	-	-	-	-
Children examined	**-**	-	-	-	-	-	-	-	-	-	-	-
Refractive errors	**-**	-	-	-	-	-	-	-	-	-	-	-
Glasses prescribed	**-**	-	-	-	-	-	-	-	-	-	-	-
Glasses delivered	**-**	-	-	-	-	-	-	-	-	-	-	-
Other defects identified	**-**	-	-	-	-	-	-	-	-	-	-	-
RoP Screening												
Screening visits	**2,165**	420	105	210	1,143	79	-	-	-	-	199	9
Babies screened	**17,762**	2,905	1,881	3,897	7,370	496	-	-	-	-	1,136	77
Babies with RoP	**2,521**	196	163	154	1,891	65	-	-	-	-	29	23
RoP Babies treated	**317**	55	35	80	101	19	-	-	-	-	27	-
VISION CENTRES												
Centres	**100**	35	7	17	8	15	2	7	-	3	6	-
New + Review	**720,083**	254,888	66,509	154, 726	53,978	129, 759	13,194	19,312	-	16,855	10,862	-
Out-patients / day	**26**	26	27	30	25	31	22	12	-	19	11	-
COMMUNITY EYE CLINICS AND CITY CENTRES												
Centres	**6**	3	1	1	-	1	-	-	-	-	-	-
New + Review	**179,068**	96,727	23,075	29,075	-	29,409	-	-	-	-	-	-
Outpatients / day	**97**	107	77	93	-	95	-	-	-	-	-	-

Aravind Integrated Eye Bank Service (AIEBS)

Even as the threat of the pandemic was looming large, Aravind eye banks figured out ways to continue their cornea harvesting and distribution. Eye bank teams strictly followed the protocols laid down by the regulatory bodies, reviewed the same periodically and trained the staff for ensuring their proper implementation at all levels. Intermittent lock down and other restrictions posed great challenges especially for the community-based cornea retrieval programme. But whenever the situation got better, the team with support from the community volunteers sprang into action. 56% of the tissues collected last year were through community cornea retrieval programme and the remaining through collaboration with hospitals. The demand and supply for corneas was thus managed and it was ensured that no patient had to wait longer for want of corneas. In fact, eye banks could continue its routine supply of cornea, sclera and amniotic membrane graft to other hospitals on request. A total of 48 hospitals were thus benefitted.

Cornea retrieval through hospitals continued without any break, ensuring that all the necessary safety protocols were followed. In the last year, cornea retrieval programme was launched at Govt Medical College and Hospitals at Virudhunagar, Viluppuram and Tirunelveli. Counsellors were trained and posted at the morgues of these hospitals to motivate the family members of the deceased to donate eyes and facilitate the process. Volunteers among the staff of these hospitals notified the eye banks of any death occurred.

Aravind-Chennai opened a state-of-the-art eye bank and the new facility was inaugurated on February 14, 2022 by Dr. Venkatesh Prajna, Chief, Cornea and Refractive Surgery Services, Aravind-Madurai.

Training

Rotary Aravind International Eye Bank (RAIEB), Madurai offered training to seven eye bank technicians, an eye donation counsellor and a co-ordinator.

Statistics

Centre	Eyes Collected	Eyes utilised in Aravind	Sent to other institutions
Madurai	1,807	877	53
Coimbatore	542	407	13
Tirunelveli	448	222	7
Pondicherry	252	174	4
Total	3,049	1,680	77

Special 'kolam' to observe Eye Donation Fortnight, Aravind-Tirupati

Education and Training

With the threat of COVID looming over for the most of 2021 and early 2022, most of the CME programmes that Aravind conducted were virtual. These offered an ideal atmosphere for rich sharing of knowledge. There were very few in-person training programmes and these were mainly for doctors and allied ophthalmic personnel to brush up their knowledge and know about the latest trends in their field. Less patient footfall caused by the pandemic urged doctors to spend their time effectively on academic activities. Many gave insightful talks on their areas of expertise at the webinars organised by other institutes. For some, it presented the ideal opportunity to focus on research and publications. As the national level eligibility test for postgraduate courses in medicine did not happen in time, admission to these courses was deferred and probably, in a first-of-its-kind situation Aravind did not have any candidates joining for the these courses in 2021.

Continuing Medical Education (CME) programmes organised by Aravind

Best practices in patient care

Aravind- Coimbatore, April 24
Aravind-Coimbatore conducted the CME for its entire staff involved in patient care delivery. Various aspects of patient care delivery such as ensuring quality, importance of effective communication professional ethics and continuous improvement.

Refraction skill workshop

Aravind-Coimbatore, April 26
Refraction department of Aravind-Coimbatore organised the workshop for its allied ophthalmic Personnel (AOP) to teach them the skills needed for performing refraction. Participants were divided into

Refraction skill workshop

11 teams. Each team was given a skill related topic. With the help of seniors, trainees from each group came up with presentations on various skills. Charts and models representing vision cubicles were prepared and instruments and techniques used in refraction were displayed.

Role play at the CME on Situational analysis

Participants at the CME on Patient safety goals

Participants at Hackathon 3.0

CME on Medico-legal cases

Aravind-Coimbatore, April 17

The CME conducted for the AOP of Aravind-Coimbatore dealt with the procedures to handle medico legal cases. The session helped the participants also understand the importance of documenting medico legal cases and communication with patients or their family members while handling such cases.

CME on Situational analysis

Aravind-Coimbatore, May 7

The CME aimed to orient the participants on the importance of giving individual attention to patients; confirming patient identity at every stage of care, importance of listening and proper communication skills. Trainees from the departments – Medical Records, Refraction, Out-patient, Lab, Counselling, Ward, Operation theatre and Opticals – depicted challenging situations they face at work in the form of role plays. The analysis that followed the presentation helped everyone understand that having soft skills are equally important as content knowledge to perform well at work.

CME on Patient safety goals

Aravind-Tirunelveli, May 27-28

Aravind-Tirunelveli organised the CME for its staff. Senior medical consultants briefed on the 10 patient safety goals and how to achieve those. The sessions were made interesting and lively by quoting snippets from day-to-day work incidents. Discussions revolved on how to avoid such incidents in future.

Hackathon 3.0

Aravind-Pondicherry

Aravind Centre for Eye Care Innovations organised two hackathons, to motivate staff to come up with innovative ideas to enhance the quality of eye care delivery. The first event held on June 12 had 16 teams comprising ophthalmic technicians, ophthalmologists

Participants at the workshop on current GCP, ICMR, new drugs and clinical trial rules

and AOP of Aravind-Pondicherry working on 16 problem statements.

Hackathon 3.0 held on January 8 and 9 brought together young engineers from Atal Incubation Centre, Pondicherry Engineering College Foundation (AIC-PECF) and Vellore Institute of Technology (VIT), Vellore; and doctors and staff of Aravind on a common platform to work on various problem statements and bring about innovative solutions.

Workshop on current GCP, ICMR, new drugs and clinical trial rules

Aravind-Pondicherry, August 27

Institutional Ethics Committee (IEC), Aravind Eye Hospital, Pondicherry conducted the workshop for its doctors and clinical research co-ordinators. It focused on the latest updates in International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH) – Good Clinical Practice (GCP); informed consent, ICMR guidelines during emergency situations and other regulatory guidelines.

Vitrectomy workshop

Aravind-Madurai, November 12-13

The workshop was organised for operation theatre nurses to brief them on the importance of anterior vitrectomy, its management and the features in vitrectomy machines.

Operation theatre nurses learning about vitrectomy machine at the workshop

Importance of professional skills for counsellors

Aravind-Coimbatore, November 14

Around 50 counsellors from Aravind - Coimbatore, Tirupur, Udumalpet and Salem participated in this workshop. The workshop focused on the importance of listening, communication skills, being empathetic and how imbibing these soft skills could facilitate a change in the counselling approach and outcome.

Phaco development workshop

Aravind-Madurai, November 26 -27

Cataract and IOL Services, Aravind-Madurai in association with Alcon conducted phaco development workshop for MS residents. A total of 15 residents took part.

Dr. Aruna Pai handling a session at the Phaco development workshop

Hands - on training at MIGS symposium

Hands-on training at IOL loading workshop

MIGS symposium - Mission possible 2022

Aravind-Pondicherry, January 8

Aravind-Pondicherry organised a symposium on Minimally Invasive Glaucoma Surgery (MIGS) – Mission Possible, to help participants learn Bent Ab-interno Needle Goniectomy (BANG), iStent (Glaukos) implantation, tips and tricks for Gonioscopy- assisted transluminal trabeculotomy (GATT) and basics of trabectome. A dry-lab session was arranged to train the participants on iStent implantation. Ten glaucoma surgeons from Aravind centres – Madurai, Coimbatore, Tirunelveli and Chennai – took part.

IOL loading workshop

Aravind-Madurai, December 10-11

Cataract and IOL Services, Aravind-Madurai conducted a workshop for operation theatre allied ophthalmic personnel to improve their IOL loading skills. A total of 63 participants took part.

CME for Staff of vision centres, surgical centre and community centre

Aravind-Tirunelveli, December 12

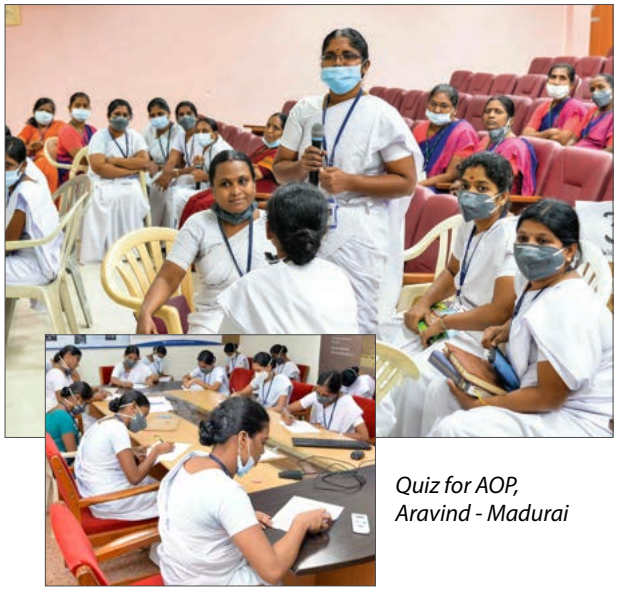
Aravind-Tirunelveli organised the CME for staff to update their knowledge about specialty eye conditions and the latest technology used in diagnosis and management of eye diseases. About 95 staff members took part.

Diagnostic skills transfer course

Aravind-Tirupati, March 13

SV Aravind Eye Hospital, Tirupati organised the course in association with Andhra Pradesh Ophthalmic Society and Tirupati Ophthalmic Society. A total of 85 perple took part. Stations were set up to facilitate hands-on training on various diagnostic tests. A quiz was also conducted in which the participants enthusiastically took part.

Inauguration of Diagnostic skills transfer course



Quiz for AOP, Aravind - Madurai

Allied Ophthalmic Personnel Training

COVID-19 pandemic and lockdown restrictions paved way for drop in patient volume in many centres. To utilise the downtime, AOP were encouraged to organise department-wise exhibitions to facilitate cross learning as well as to make all staff aware of the functions of each department.

To evaluate AOP's competency level and to give them an opportunity to brush up their knowledge and get updated, an examination was conducted at Aravind-Madurai on November 26. A total of 415 MLOPs took the examination and from this, the best 30 performers were selected for the final quiz competition. The participants took part in teams and the winning teams were awarded.

Department-wise exhibitions by AOP at Aravind - Pondicherry ...

... Aravind - Tirunelveli

... Aravind - Madurai

CME on CSSD, Aravind - Coimbatore

Doctors of Aravind - Tirupati attending ReLOAD

The MSICS way, Aravind-Madurai

Online CMEs / Webinars held during April 2021 to March 2022

- Webinar on Mucormycosis, Aravind-Chennai, June 19
- Strabismus lecture series, Aravind-Madurai, July 27
- Symposium: How to get away with aphakia? Aravind-Pondicherry, September 17
- CME on CSSD for AECS, Aravind-Coimbatore, September 25
- ReLOAD (Review Learnings on Advancement and Development), Aravind - Madurai, October 28 -29
- CME on Central Sterile Supplies Department (CSSD) protocols for specialities at AECS, Aravind-Coimbatore, November 12
- CME on Biometry for AECS, Aravind-Coimbatore, November 19
- Digital diabetic retinopathy workshop, Aravind-Madurai, November 28
- CME on CSSD protocols for paramedics, Aravind – Coimbatore, December 15, 2021
- Eye care librarians meet, Aravind-Madurai, December 17
- Webinar on conquering complex cataracts: The MSICS way, Aravind-Madurai, March 26

AOP alumni meet 2021

Aravind – Pondicherry, October 31

Allied Ophthalmic Personnel (AOP) is the driving force for the smooth and hassle-free operations of Aravind Eye Hospitals. For the first time in its history of 18 years, Aravind-Pondicherry organised an alumni meet of its AOP; 85 alumni took part. The meet offered a platform for the alumni to see firsthand the growth of the hospital over the years and revived good memories. Many felt proud of their association with Aravind and wanted to have a continuing relationship.

Candidates Trained 2021 - 2022

Total Candidates: 288

POSTGRADUATE COURSES

Master of Surgery in Ophthalmology (3 years)	11
Diplomate of the National Board (3 years)	21
Post DO DNB (2 years)	11

LONG-TERM OPHTHALMOLOGY FELLOWSHIP

Ant. Segment / Intraocular Lens Microsurgery (2 years)	19
Orbit & Oculoplasty (18 months)	06
Paediatric Ophthalmology & Strabismus (18 months)	06
Glaucoma (2 years)	14
Retina Vitreous (2 years)	24
Cornea (18 months)	19
Medical Retina (1 year)	01
Fellowship in General Ophthalmology	14

SHORT-TERM CLINICAL COURSES FOR OPHTHALMOLOGISTS

Clinical Observership Program In Diagnosis and Management Of Glaucoma (1 month)	02
Lasers in Diabetic Retinopathy (2 months)	02
Neuro-Ophthalmology (3 months)	04
Phacoemulsification (1 month)	20
Small Incision Cataract Surgery (1 month)	10
Short Term Training in Virtual Vitrectomy (2 weeks)	02
Management of Retinopathy of Prematurity & Paediatric Retinal Disorders (1 month)	08

SHORT-TERM PARAMEDICAL COURSES

Ocularist (3 weeks)	02
Telescreeing in Retinopathy of Prematurity (1 month)	02

MANAGEMENT COURSES

Community Outreach and Social Marketing for Eye Care Services (3 weeks)	07
Instrument Maintenance - For Technicians (1 month)	03

MANAGEMENT COURSES (ONLINE)

Project Management training for Eye Care	20
Eyexcel 2.0	29
Ophthalmic Instruments Maintenance - Part I	31

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Consultancy and Capacity Building

With the uncertainties relating to COVID prevailing for most part of the year, it took a while for LAICO to resume its activities in a full-fledged manner. Thanks to technology, LAICO was able to run and manage most of its capacity building initiatives and a few training programmes virtually.

Consultancy and Capacity Building

LEAP collaborative series

The series aims to bring about improvements in specific functional areas of eye hospitals through a collaborative method and is funded by Lavelle Fund for the Blind. This approach is based on the highly effective and popular 'Breakthrough Series' model developed by the Institute for Healthcare Improvement (IHI), USA.

Establishing and strengthening vision centres

The first batch of the year-long online collaborative series to facilitate partner hospitals to establish and efficiently run IT enabled vision centres came to an end in September 2021. Nine hospitals from India, Nepal, Bangladesh and Guatemala participated. There were three learning sessions and ten collective monthly review meetings. This is in addition to the regular weekly meetings with the LAICO faculty team. A total of seven CMEs, four quiz programmes were conducted through Aurosiksha platform. At the end of 12 months, the partner hospitals were able to perform 2,795 additional cataract surgeries through vision centre referral.

LAICO launched the second batch of this series in October 2021 with 17 participating teams. The three learning sessions were held in October 2021, December 2021 and March 2022 respectively. The first monthly meeting is scheduled for 19th April 2022.

Community Referral System

In order to create easy access for eye care and to strengthen the community's engagement during this pandemic, LAICO rolled out a ten month collaborative learning programme in December 2021. One learning session and seven monthly review meetings were organised as part of this collaborative. 15 hospital teams participated and tested seven innovative ideas to strengthen community referral system. At the end of 10 months, the hospitals after implementing these ideas were able to collectively perform 13,541 cataract surgeries. This contributes 22% of their overall cataract surgery proportion. Now, most of these ideas have been integrated into the mainstream activities of the hospitals.

Implementing NABH Standards for entry level certification through collaborative learning

LAICO launched the first batch of this collaborative series in February 2021 to prepare hospital teams for NABH accreditation. A total of five hospitals were enrolled in the first batch. Aravind team consisting of LAICO faculty and managers visited these hospitals for implementation of standards, documenting the process, training the local team and finally supporting them in the application process. Of the total five hospitals, three have completed their application and in that, two

Ms. Chandravadhana and Mr. Yesunesan during the NABH gap analysis and training visit to Sundarbans Eye Hospital as part of the LEAP NABH collaborative

received the accreditation certificate. The remaining two hospitals will complete their application process by April 2022.

Leadership essentials to lead effectively

Supported by Conrad N. Hilton Foundation, LAICO ran this six-month leadership programme from September 2021 to February 2022. A total of 14 senior officials from 11 eye hospitals took part. Each participant was assigned a mentor. Six learning sessions, five collective review meetings and a webinar were conducted as part of this collaborative.

Global sight initiative collaboration

LAICO continued to work with 11 of its partner hospitals under the Global Sight Initiative programme supported by SEVA Foundation. 1,796 free cataract surgeries were performed by these hospitals. As part of this initiative, Sankara Eye Hospital and Netaji Eye Hospital established one vision centre each, with support from LAICO.

Support for free cataract surgeries

BOSCH, a leading global supplier of technology and services, as part of their CSR activity has been collaborating with LAICO to provide free cataract surgeries for the poor and the needy in the 249 villages adopted by it across 13 Indian states. LAICO identified 23 potential partners in these states and enrolled them in this project. All the allotted surgeries were completed by the partners and the project ended successfully in March 2022.

Final evaluation - CBM multi-year service delivery project

Upon request from CBM, LAICO did the final evaluation of multi-year service delivery projects in five of its partner hospitals in the last week of December. The hospitals were Lok Nayak Jay Prakash Eye Hospital, Dumka, Jharkand; Ruby Nelson Eye Hospital, Jalandhar, Punjab; Sewa Sadan Eye Hospital Trust, Bhopal, Madhya Pradesh; Srikiran Institute of Ophthalmology, Kakinada, Andhra Pradesh and Dr Shroff Charity Eye Hospital, Saharanpur, Uttar Pradesh. The purpose of the evaluation was to assess whether the project has achieved the set broad objectives during the past 5 years and to document particular areas where the project has been particularly successful or challenging. Findings from the evaluation will contribute to project learning as CBM is planning for the second phase of this project beginning in January 2022.

UP-SIGHT project

Aravind Eye Care System ventured a long term partnership with Sitapur Eye Hospital, and LAICO in collaboration with the various Aravind Hospitals co-ordinated the project activities. This included deputing necessary human resource as per the need to Sitapur Eye Hospital, redesigning the current infrastructure, training various cadres of Sitapur staff team, EMR implementation and support, assisting in resource mobilisation, purchase of equipment, meting out the necessary IT Infrastructure etc.

Sriharinath andVikky Kumar during their visit to Tulsi Chanrai Foundation Eye Hospital, Abuja to provide onsite support

Aadhiparasakthi and Seran with the team at Sitapur Eye Hospital

Onsite Support

LAICO facilitated onsite support for its partner hospitals on request. LAICO faculty and managers from Aravind Eye Hospitals were deputed to these hospitals to help them implement best practices and streamline various operational and administrative systems and procedures for better efficiency.

Teaching and Training

Building LAICO's capacity for virtual training

Due to the pandemic situation, LAICO started engaging its hospitals and learners virtually. Though available technologies were deployed for delivery of courses and virtual interactions, a lot of short-comings both in the production of the virtual courses and running them were noticed. The need for upgrading and addition of technologies for producing and delivering quality virtual sessions was thus felt. This resulted in LAICO developing an audio-visual unit to create quality teaching resources, with support from Lavelle Fund for the Blind. The studio was inaugurated on April 6.

Eyexcel 2.0

LAICO conducted Eyexcel 2.0 from May 05 to June 09, 2021, for the first time, as a completely virtual course. Training sessions were scheduled weekly, spread across 6 weeks. 12 teams participated and worked on various real-time training projects.

EyeTRAIN

LAICO, December 6-10
For the first time, LAICO conducted eyeTRAIN online conference exclusively focused on training of AOP. eyeTRAIN was a juncture that brought together eye care training institutions from across the globe, to showcase best practices and resources for AOP.

Although the conference had a focus on AOP training, it received over 90 submissions for the competitions: It received 43 abstracts for the paper presentation competition, 45 videos and 7 simulation models. 15 of 43 abstracts were shortlisted by the Jury and they were invited to present online. Guest lectures were one of the highlights of this conference.

Winning videos and simulation models were screened online and for paper presentation competition, the conference had 'TOP 5 Best Paper Awards'.

Aurosiksha

Aurosiksha, Aravind's online portal for allied ophthalmic personnel (AOP) has increased its user base and the total count of subscribers has risen to 7047.

With new training materials uploaded for 10 knowledge-based and 9 skill-based competencies, Aurosiksha now has a library of training materials for over 140 competencies.Training materials for over 30

Mr. G. Srinivasan inaugurating LAICO's new audio visual unit

competencies have now been made available in Spanish. These translated materials have been developed in collaboration with Visualiza Eye Hospital in Guatemala and Divino Nino Jesus Eye Hospital in Peru, with support from Seva Foundation, USA.

Short online quizzes were launched to enhance the knowledge of AOP on a range of topics from refractive errors to ophthalmic suture needles. An average of 500 AOPs worldwide responded to each of these six quizzes.

In addition, Aurosiksha's learning management system (LMS) feature helps eye hospitals manage the delivery of AOP training. The LMS features online tests, digital skill assessment tool, class scheduling and entry of test scores. This year, nine eye hospitals have started using the Aurosiksha LMS for their AOP training.

October Summit

With the Corona Virus still doing its rounds, October Summit, the annual event held in honour of Dr. G. Venkataswamy was observed in a low key manner. Two programmes were organised as part of October Summit, one each by Aravind-Pondicherry and LAICO.

Masterminds

Aravind Centre for Eye Care innovations organised a symposium titled, Masterminds - Innovations for a purpose, as part of October Summit. The programme was hosted by Aravind-Pondicherry. The core theme of this symposium was to promote and disseminate the culture of innovation to enhance patient-centred care in eye care delivery. A total of 274 people registered for the symposium and 49 took part.

Reaching the unreached in the new normal - LEAP Community Referral System

To share the outcomes and rich learnings gained out of the LEAP collaborative on Community referral system, LAICO organised a webinar on October 21.The webinar started with an opening talk by Mr. Thulasiraj Ravilla, Executive Director, LAICO followed by the speakers sharing their experiences. There were 72 participants in addition to the panelists.

Projects

- Providing optimal care for economically disadvantaged people with ocular trauma, Aravind-Madurai: funded by Standard Chartered Global Business Services (GBS) Pvt Ltd
- RoP Telescreening project, Aravind-Madurai: funded by Standard Chartered Global Business Services (GBS) Pvt Ltd
- Setting up of surgical training centre at Free section, Aravind-Madurai: funded by Standard Chartered Global Business Services (GBS) Pvt Ltd
- Improving adherence to follow-up in childhood glaucoma, Aravind Madurai: funded by USAID
- Impacting quality of life in women through Presbyopia correction, Aravind Coimbatore: funded by Standard Chartered Global Business Services (GBS) Pvt Ltd
- Improving RoP telemedicine systems in southern India, Aravind-Coimbatore: funded by USAID
- Evaluation of artificial intelligence in a large ROP tele-screening programme in southern India with additional evaluation of lower-cost camera systems, Aravind Coimbatore: funded by Seva Foundation
- Enhancing early glaucoma detection through family screening to reduce glaucoma related blindness at Aravind tertiary care centres-Pondicherry, Coimbatore, Madurai, Tirunelveli and Chennai
- RoP screening and treatment programme in underserved and rural areas of Tiruvallur, Kancheepuram, Vellore and Chennai Districts, Aravind-Chennai: funded by Cognizant Foundation
- Aravind centre for technology assisted facial alignment and surgical treatment (ACT-FAST) - Project SHINE, Aravind-Chennai: funded by TATA Lockheed Martin Aero Structures Ltd (TLMAL)
- Setting up 6 Phaco training centres across the country for making phaco surgery popular, Aurolab: funded by Standard Chartered Global Business Services (GBS) Pvt Ltd
- Vision centre project (Cycle 7): funded by TOMS through Seva Foundation
- Vision centre projecs (Cycle 9) for 3 VCs: funded by TOMS Seva Foundation
- Vision centre projects (Cycle 10) for 4 VCs: funded by TOMS Seva Foundation
- Setting up of 10 vision centres as part of Dr. V's birth centenary commitment: funded by Seva Foundation
- Universal eye health through tech enabled vision centres: funded by FICCI-Millennium Alliance

- Centre for Excellence in allied ophthalmic training: funded by Standard Chartered Bank
- Enhancing eye care services in Indian sub-continent, : funded by Lavelle Fund for the Blind
- Leap-together towards excellence collaborative series to enhance eye care : funded by Lavelle Fund for the Blind
- ACCESS - African centres of excellence in cataract surgical services (Extension of HCI phase II), funded by Conrad N. Hilton Foundation
- Enhancing LAICO's capacity to bring an effective change in eye hospitals, funded by Conrad N. Hilton Foundation
- Systematic paediatric eye care through sibling screening strategies (SPECSSS): funded by Seva Foundation
- Global Sight Initiative Collaboration with Aravind Eye Care System and Seva network hospitals.

Health Services Research

LAICO' Research Division is assisting the Government of Tamil Nadu to design and conduct a Rapid Assessment of Avoidable Blindness (RAAB) for the state. As part of this, one day training was organised on 9th October 2021 for the District Programme Officers and government Ophthalmic Assistants on the design and methodology of the RAAB survey. A total of 147 people took part. The training was anchored by Prof B R Shamanna, Professor of Community Medicine, University of Hyderabad and certified RAAB trainer from International Centre for Eye Health (ICEH), London and Dr. S V Chandrakumar, Programme Director, Tamil Nadu State Blindness Control Society (TNSBC).

The initiative facilitated by the research division to increase the involvement of staff members at LAICO in research projects thereby enhancing publications in the current year. Every Saturday, the forenoon was dedicated to this cause and researchers were encouraged to congregate in a classroom to make progress in their respective projects. The progress is monitored and documented in consultation with the researchers by the research division and the same is communicated to them every Monday to help them keep track of the pace at which their research study advancing.

Another important initiative anchored by the research division towards building the research culture at LAICO is the weekly Journal Club. Alongside the participation of Aravind employees, the journal club is attended by national and international participants from LAICO's partnering institutions. Fifty two articles were presented based on clinical, epidemiological and health services research studies, of which 12 were presented by the members of partnering institutions and the remaining by Aravind staff. Ten health services research projects are currently anchored by LAICO.

At the inauguration of the training programme for District Programme Officers and government ophthalmic assistants

Research

In the area of biomarkers, Aravind Medical Research Foundation continues to explore the usefulness of micro RNAs (MiRNAs) as regulators of diseases such as diabetic retinopathy, ocular surface diseases including fungal and bacterial keratitis. In a parallel study, the role of MiRNAs in ocular stem cells is also being explored. Preliminary studies on the nanocarriers exploring the possibility of using extracellular vesicles in ocular diseases reached a stage where AMRF will attempt the development of novel diagnostics and reconfigurable therapeutics for some of the ocular conditions. Research atAMRF specifically targets diabetic retinopathy, age-related macular degeneration, (AMD), corneal opacity (fungal keratitis), and glaucoma, all included in the WHO priority eye diseases.

Proteomics

Research focus of the Proteomics department is on major ocular diseases namely, fungal keratitis, diabetic retinopathy, keratoconus, and pterygium, all of which are of importance to the Indian population. Multiple approaches are employed to understand the disease mechanism at the genome and transcriptome level, but more importantly from a proteome standpoint. In-depth and comprehensive proteome analysis of any ocular fluid or tissues is possible because of the state-of-the-art proteomics facility at AMRF. This facility has the infrastructure to perform gel-based and non-gel based proteome analysis and is equipped with two mass spectrometers. The outcomes of the basic research are translated as diagnostic or therapeutic strategies to improve disease management.

Fungal keratitis is one of the important causes of monocular blindness in India, affecting primarily the agrarian population. And, Fusarium sp. and Aspergillus flavus are the two leading causative agents. Tear is an excellent surrogate to understand the host response to fungal infection while the cell culture model using epithelial cells provides an insight to the early events during a fungal infection. Both the fungus and the host response contribute to the progression of the ulcer and the treatment outcome, and the current treatment for fungal keratitis only targets at killing the fungus. There are no methods to assess whether the host immune response aids in healing or worsening of the corneal ulcer. To address this gap, six tear proteins that could serve as indicators of the host inflammatory response were quantified from a large cohort of 150 patients. Four of these proteins in combination with the ulcer characteristics such as depth, size and location were capable of predicting the treatment outcome in a patient at an early time point. This prediction will aid the clinicians to identify the subset of patients who are unlikely to respond to treatment and advise them early surgery. Extracellular vesicles (EVs) are now emerging as an important area with immense potential in diagnostics and therapeutics. EVs are small lipid membrane bound vesicles released by nearly all cell types under normal and diseased conditions. The team is currently characterizing the EVs in tear from keratitis patients as well as from fungal isolates to explore the possibility of using these EVs as adjuvant therapy alongside antifungal drugs.

Confirmation of protein transfer in Western blot experiment

The primary focus in diabetic retinopathy (DR) research is to identify and validate prognostic biomarkers that can predict either the onset or the progression of the disease. A comprehensive mass

spectrometry based proteomics approach was used to examine the proteome alterations in serum and serum microparticles during DR progression. Twelve serum proteins and eight serum microparticle proteins were shortlisted and validated in a sample cohort of more than 200 patients across different sample groups. Together, five serum proteins (CFB, Serpin A4, cystatin C, thrombospondin 1, fibronectin) along with two microparticle proteins (CD41/61, peroxiredoxin) form a panel of DR biomarkers capable of predicting the onset or progression of DR. These validated biomarkers will further be taken up for the development of sensitive biosensors that can be used under any clinical or field settings without sophisticated infrastructure.

The team is investigating the mechanism of action of a novel chemical cross-linker for the treatment of keratoconus. The cross-linker was formulated through a collaborative project with the University of Liverpool. It has been established that the chemical cross-linker could increase the stiffness of ex vivo pig, human and in vivo rabbit corneas with negligible cytotoxicity to the cells of corneal layers. Experiments to study the mechanism of action revealed that the novel cross-linker could reduce the expression of inflammatory genes MMP-9 and Col1A1 in corneal epithelial cells and expression of MMP-2, IL-6 and Col1A1 in stromal cells. There was a consistent decrease in the levels and activity of metalloproteases MMP-2 and MMP-9 after crosslinker treatment in both corneal epithelium and stroma.The expression of these proteins is reported to be upregulated in keratoconus and the cross-linker could reduce the inflammatory conditions associated with keratoconus.

EVs, a heterogeneous population of lipid-encased nanoparticles released by many cell types, regulate a vast range of (patho) physiological processes. While several pieces of literature point out the role of EVs in tumour angiogenesis, the role of EVs in ocular angiogenic diseases like DR and age-related macular degeneration has remained largely unexplored. The broad objective of the project is to decipher the role of EVs in DR initiation/progression and explore its potential as a DR biomarker. Using the ultracentrifugation technique, the team has successfully isolated EVs from the plasma of patients with proliferative DR and characterised using Nano Tracking Analysis and immunoblotting for exosomal markers. Mass-spectrometry analysis of plasma EV protein has revealed that complementary cascade proteins and oxidative stress response proteins are highly represented and thus can serve as a potential biomarker. Future studies will aim toward the identification of protein and RNA cargo in EVs from patients with progressive disease conditions (mild, moderate, severe NPDR) and also comparing plasma EVs to that of EVs from vitreous humor. Further, how EVs from diseased states alter retinal cell function will be evaluated.

Pterygium is a highly prevalent conjunctival eye disease that causes vision impairment, significantly impacting the quality of life of people, mostly from low socioeconomic status working outdoors. It is characterized by a wing-shaped conjunctival fibrovascular overgrowth typically originating from the nasal side, migrating towards the cornea. In southern India, the incidence rate of pterygium is 25.2 per 100 person-years and adds to ~4% of the corneal blindness burden. UV exposure is a critical causative factor of the disease, however, disease etiology remains obscure. Despite the high 12% prevalence rate, there is no pharmaceutical intervention to prevent pterygium progression. Surgical removal is the only treatment option and no prognostic tools to predict disease progression/recurrence exist. The broad objective was to identify candidates in pathways contributing to pterygium pathogenesis with the goal of attenuating disease progression using pharmacological inhibitors. The team at AMRF used a multi-omics approach: a. A Next-Generation RNA Sequencing based transcriptomic analysis of pterygium conjunctival tissue and control cataract conjunctiva and b. A shotgun mass spectrometry-based proteomic approach using both conjunctival tissue and tear to identify pathways altered in pterygium patients. Functional annotation of upregulated genes and proteins revealed that genes with higher expression levels were mainly associated with cell adhesion/extracellular matrix organization, angiogenesis, proteolysis and inflammatory response. Based on this data, pharmacological inhibitors have been shortlisted and will be evaluated in a pterygium cell culture system to test their efficacy in attenuating disease progression.

Molecular Genetics

Next-Generation Sequencing (NGS) mediated genetic testing offers high quality assurance data to predict a reliable molecular diagnosis for better prognosis. Recently, genetic research has advanced precision medicine in the treatment of patients with inherited

eye diseases. Current projects at AMRF utilise targeted exome sequencing, whole exome sequencing (WES) and whole mitochondrial DNA sequencing to identify genetic determinants of Leber's hereditary optic neuropathy (LHON), Leber's congenital amaurosis (LCA), and Juvenile X-linked retinoschisis (JXLR). LHON, a non-syndromic form of hereditary optic neuropathy follows maternal inheritance and it mainly affects second- and third-decade age group people due to selective degeneration of retinoganglion cell (RGC) leading to irreversible vision loss. Whole mitochondrial DNA sequencing of 100 LHON affected individuals revealed that 56% of them were affected by either primary mitochondrial DNA mutation or secondary mitochondrial DNA mutation associated with LHON while the disease progression in the remaining 44% is still unknown.

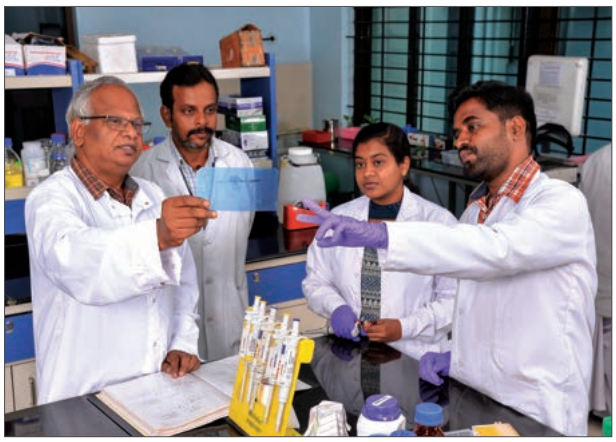
LCA is an autosomal recessive genetic disorder, mostly affecting the photoreceptors responsible for day and night vision, resulting in childhood blindness. LCA accounts 5% of all inherited retinal dystrophies. LCA encompasses a group of heterogeneous disorders, with 29 genes currently implicated in pathogenesis. The current study aims to reveal the genetic etiology of 138 south Indian LCA patients using panel-based targeted sequencing. Among 138 patients, 112 were identified with mutations in 21 known LCA candidate genes, of which 45 patients possessed a novel mutation. The mutation detection rate was 81%, consisting of 63% pathogenic, 17 % likely pathogenic, and 20% variants of uncertain significance. Molecular diagnosis helps to understand the genetic etiology, which would further help to provide an accurate clinical diagnosis and genetic counseling and pave the way for gene therapy. JXLR is an X-linked recessive retinal dystrophy cause splitting of the retinal layer due to retinoschisin (RS1) gene mutations. The present study describes the cumulative findings of en-face OCT for a 7-year-old JXLR patient harbouring a heterozygous pathogenic RS1 mutation (c.G668A; p.Cys223Tyr) through Sanger sequencing, the amino acid residue 223 vital for cellular adhesion. Fundoscopy showed cart-wheel appearance at macula. Further, en-face OCT revealed characteristic schitic lesions in the ganglion cell layer, inner plexiform layer, inner nuclear layer, and outer plexiform layer. The findings of this study further strengthen the clinical diagnosis of JXLR patients with RS1 mutations based on the non-invasive en-face imaging of their retinal microstructures.

Genetic testing of RB1 gene was performed in 37 retinoblastoma patients and their families during the year. In 15 patients (40%), mutations were identified in their blood samples indicating the increased risk of inheritance. The review of the demographic features of the patients and families suggested that increased age gap of the parents was a potential risk factor for the RB occurrence in children. Apart from retinoblastoma, the clinical features of ocular adnexal lymphoma patients were analysed and 53% of patients were found to have complete remission of the disease. Subtyping of the ocular lymphoma also helped in better disease prognosis.

Immunology and Stem Cell Biology

Adult stem cells play a significant role in the maintenance of the tissue homeostasis (tissue where they reside) throughout life. Understanding the basic biology of the adult ocular tissue resident stem cells is essential to develop better stem cell based therapies

Dr. P. Sundaresan interpreting the data with his students



Confocal microscopic analysis of a lens section after immunostaining

for various ocular conditions. Studies are being carried out on limbal epithelial stem cells in relation to corneal surface disorders, trabecular meshwork stem cells in primary open angle glaucoma, lens epithelial stem cells in age-related cataract and retinal pigment epithelial stem cells in age-related macular degeneration.

Recent studies on cataractous donor lens confirmed that the epithelial stem cells are lost in age-related cataract tissues and the effect of this loss on tissue maintenance/role in development of cataract is being analysed. In human retina, the stem cells for the retinal pigment epithelium have been identified to be located in the peripheral region based on the functional properties of adult stem cells. Two new research programs have been initiated on trabecular meshwork stem cells – (i) understanding the molecular mechanisms regulating the trabecular meshwork stem cells, the modifications that occur with ageing and in primary open angle glaucoma and (ii) characterization of trabecular meshwork stem cell-derived extracellular vesicles and its role in trabecular meshwork cell proliferation/regeneration.

Ocular Pharmacology

Glucocorticoids (GCs) are widely used in ophthalmology for their anti-inflammatory and immune-modulatory properties. Long-term use induce GC-induced ocular hypertension (GC-OHT) and glaucoma in susceptible individuals. However, the molecular pathogenesis is not yet fully understood.

As a step towards this goal, a perfusion cultured human anterior segment (HOCAS) ex vivo model system was established to induce GC-OHT experimentally in human cadaveric eyes to determine GC responsiveness. With the known GC responsiveness, the primary cultures of trabecular meshwork cells (cells from tissue of interest) were established in order to identify the dys-regulated miRNAs and genes using RNA Seq technology after dexamethasone treatment. A number of dys-regulated miRNA-mRNA pairs were identified in cultured trabecular meshwork cells derived from experimentally induced glucocorticoid-ocular hypertension (GC-OHT) and validated. The miRNA manipulation experiment revealed that the presence of miR483-3p down-regulated SMAD4/TGFβ2 signaling and decreased the production of extracellular matrix proteins in HTM cells. Interestingly such down-regulation is more prominent in GC-R HTM cells as compared to GC-NR cells. Therefore, the up-regulation of miR483-3p and subsequent down-regulation of its target Smad4 may serve as a protective mechanism to regulate ECM proteins in HTM cells upon DEX treatment.

Bioinformatics

Bioinformatics lab provides next-generation sequencing data analysis services for in-house research projects. The lab recently developed a tool that identifies the pathogenic variants from thousands of variants from genome/exome data of eye diseases. In addition, a machine learning model was developed to distinguish and prioritize the pathogenic variants of eye diseases from other diseases. The lab has identified the role of alternative transcripts in the progression of retinoblastoma through in-silico meta-analysis and alternative transcript prediction tools. In tandem, the lab is interested in human small-noncoding RNAs called miRNAs that could be used as diagnostic and prognostic markers for infectious eye diseases.

Pharmacology team assessing the efficiency of hsa-miRNA 483-3p transfection in primary human trabecular meshwork cells

Discussion underway at Bioinformatics lab

In intra-ocular tuberculosis (IOTB), in addition to miRNA markers identified from AH samples, three miRNAs miR-150-5p, miR-26b-5p, and miR-21-5p were identified as potential TB-specific miRNAs in VH. In fungal keratitis, the list of putative miRNA markers was identified that will be further validated in a large sample size, which can yield a set of specific biomarkers in response to Aspergillus or fusarium spp. Infection.

Conferences / Workshops conducted

Workshop on leveraging clinical genomics to improve human health

August 27

The one day workshop was organised in a hybrid mode and in collaboration with Premas Life Sciences. It aimed to provide updates on recent developments in next generation sequencing. AMRF faculty and research scholars participated in the workshop and interacted with the technical team from Premas Life Sciences.

International workshop on data science and modern biology

December 20-21

The workshop was planned as a refresher course for young researchers to update them on the current avenues in the field of modern biology. Along with lecture sessions by experts, two semi- hands on practical sessions were included, which were beneficial for the research scholars. The workshop was conducted in a hybrid mode with 70 participants attending in person and guest lectures and practical sessions conducted online.

Ongoing projects

Basic research

- *Molecular regulators associated with the maintenance of human trabecular meshwork stem cells in relation to their reduction in aging and glaucoma*
- *Development and validation of a non-invasive point-of-care diagnostic tool for fungal keratitis*
- *Role of human corneal miRNAs in the onset and severity of fungal keratitis*
- *Understanding the mechanism of action of a novel chemical cross-linker designed to treat keratoconus*
- *Prediction of treatment outcome in fungal keratitis patients*
- *Characterization of adult human lens epithelial stem cells in the maintenance of tissue homeostasis throughout life and their functional status in cataractous lens*
- *Proteome profiling of serum microparticles in diabetes and diabetic retinopathy patients: Towards identification and validation of predictive Biomarkers*
- *Translational genomics of ocular cancers*
- *Identification and validation of deregulated cancer pathways in retinoblastoma*
- *Diagnostic markers for ocular tuberculosis*
- *Prospective multicentre discovery and validation of diagnostic circulating and urinary biomarkers and development of sensor(s) to detect sight threatening diabetic retinopathy*
- *Translational genomics of paediatric eye diseases*
- *Characterisation and functional evaluation of trabecular meshwork stem cells in glaucoma pathogenesis*

Participants of the International workshop on data science and modern biology

Ph.D awarded by Madurai Kamaraj University

T.S. Balaji
Department of Molecular genetics
Thesis: Understanding the molecular mechanisms of chemoresistance in retinoblastoma
Guide: Dr.A. Vanniarajan

M. Durga
Department of Molecular Genetics
Thesis:Molecular Genetics of Macular Corneal Dystrophy (MCD) in Indian population
Guide: Dr.P. Sundaresan

- *Role of miRNA in the regulation of glucocorticoid receptor (GR) signalling and development of new therapeutics for steroid-induced glaucoma*
- *Evaluation of GD2 synthase as a prognostic biomarker in retinoblastoma*
- *Role of retinol binding protein 3 (RBP3) in progression of diabetic retinopathy (DR) and evaluate its potential as a DR biomarker in Type 2 diabetic patients*
- *Screening the Kadaladi family with early-onset glaucoma for Myocilin gene mutations and development of ER stress reversing novel chemical entities as topical ophthalmic formulations*
- *Development of aptamer-based assays for diagnosis of infectious keratitis and absolute quantitation of proteoform markers of diabetic retinopathy*
- *Identification of druggable targets for attenuating the progression of pterygium development*
- *miRNAs to reprogram human differentiated corneal epithelial cells towards lineage specific adult stem cells*
- *Deciphering the role of extracellular vesicles in the modulation of host immune response in fungal keratitis patients*
- *Investigating the role of extracellular vesicles (EVs) in pathogenesis of diabetic retinopathy*
- *Role of trabecular meshwork stem cell-derived extracellular vesicular miRNAs in human trabecular meshwork regeneration*
- *Role of dietary fatty acids in the progression of diabetic retinopathy*
- *A preliminary study to generate tear producing lacrimal gland organoids from human cadaveric and biopsy samples*
- *Molecular characterisation of Leber's Congenital Amaurosis in South Indian cohort*
- *Investigating the crosstalk between nuclear and mitochondrial genome in patients with Leber's Hereditary Optic Neuropathy*
- *Molecular genetics of juvenile X-linked retinoschisis in south Indian Population*
- *Molecular characterization of tumor progression in retinoblastoma*
- *Molecular characterization of ocular lymphoma for improved disease prognosis*

Clinical research

Cornea clinic

- *Changes in endothelial specular microscopy findings: A comparison before and after hypotonic corneal collagen cross-linking*
- *To compare femtosecond laser assisted LASIK (femto-LASIK) and photorefractive Keratectomy (PRK) in terms of astigmatism correction in patients with myopic cylindrical error*
- *Screening, diagnosis, and treatment of keratoconus in Downs's syndrome patients from South India- a prospective study*
- *Effect of COVID-19 on outcome of corneal ulcers – A retrospective multicentre study in tertiary eye hospitals of South India*
- *Outcomes of early steroids and corneal collagen crosslinking (cxl) adjuvant therapy in bacterial keratitis – A randomized control trial*
- *PCR-based detection and identification of and its species from patients with keratitis*
- *Knowledge, attitude and practice towards eye donation among ambulance workers and freezer box service providers – A questionnaire based study*
- *Strategies to improve outcomes following corneal transplant surgery: An interprofessional approach. Trends in transplantation*
- *Artificial intelligence applications in different imaging modalities for corneal topography.*

Paediatric ophthalmology and Adult Strabismus Clinic

- *Assessment of parental awareness about paediatric visual problems by a knowledge-attitude-practice (KAP) survey*
- *Correlation of refractive error in siblings of paediatric patients attending a tertiary level eye hospital*
- *Identification of potential barriers to timely access to sibling eye check up*
- *Effect of combined atropine and patching Vs patching alone for treatment of severe amblyopia in children aged 3 to 12 Years*
- *Multi-centric randomised controlled trial to compare the efficacy of 0.01 vs 0.05% atropine in progression of myopia in Indian population*
- *A step further in childhood cataract: Screening, evaluation, management, rehabilitation and training- Focus to eliminate childhood blindness due to cataract in south India*
- *To detect macular vessel density changes after inferior oblique muscle recession surgery*
- *Steroids and cross-linking for ulcer treatment*
- *Parasitic ulcer pilot study*
- *Automated quantitative ulcer analysis study*
- *Metagenomic analysis and diagnosis of ulcers rapidly with artificial intelligence SCUT II screening study*
- *Rose Bengal electromagnetic activation with green light for infection reduction study Scope II (ocular trauma)*
- *Seasonal conjunctivitis outbreak reporting for prevention and improved outcomes*
- *A multicentre, randomised controlled trial to compare the efficacy of 0.01 Vs 0.05% Atropine in progression of myopia in Indian population.*
- *Effect of video counselling versus pamphlets on awareness of refractive error among parents of children with newly diagnosed refractive error*
- *Augmented loop Myopexy with IOL in heavy eye syndrome*
- *Retrospective case series on eye movement recordings in periodic alternating nystagmus*
- *Role of LDA in myopic progression in Indian population*
- *Validation of Go-check kid based photo screener as hand-held tool for detecting amblyopia risk factors in Indian population*
- *Filamentary keratitis post strabismus*
- *Role of VEP and Bynocs -pre and post squint surgery in amblyopia patients*
- *Acute onset esotropia post lockdown*
- *Optic nerve glioma in children*
- *Retrospective analysis of surgical outcome of Brown's syndrome*
- *Electrophysiological changes in patients with Bardet Biedl syndrome*
- *Motility assessment in glaucoma drainage devices*
- *Retrospective study on the profile of secondary IOL in paediatric patients*
- *Infantile esotropia - Retrospective study*
- *Comparison of measurement of abnormal head posture by smartphone application vs cervical range of motion (CROM) in ophthalmic disorders*
- *Validation of GoCheck Kids iPhone-based photoscreener as a hand-held tool for detecting amblyopia risk factors in an Indian paediatric population*
- *A multi-cente, randomised controlled trial to compare the efficacy of 0.01 vs 0.05% atropine in progression of myopia in Indian population.*
- *Prospective evaluation of motility in glaucoma drainage device implantations*

Glaucoma clinic

- *Comparative analysis of non-absorbable 10-0 nylon sutures with absorbable 10-0 Vicryl sutures in Phaco-trabeculectomy surgery*
- *Comparison of viscoat augmented delivery of injection mitomycin-C and conventional subconjunctival injection of Mitomycin C in Phacotrabeculectomy*
- *To compare the anxiety levels of glaucoma patients undergoing visual field testing and OCT*
- *Randomised control trial: Once daily netarsudil versus twice daily Timolol in patients with elevated intraocular pressure*
- *Post-operative outcomes of phacotrabeculectomy and small incision cataract surgery with intraocular lens implantation with mitomycin C in patient with advanced glaucoma with split fixations in humphrey visual field*
- *Surgical outcome of Tanito microhook ab Interno trabeculotomy with phacoemulsification (Lot) Vs Gonioscopy-Assisted Transluminal Trabeculotomy (GATT) with phacoemulsification in patients with mild to moderate open angle glaucoma – A randomized comparative study at a tertiary eye care centre*
- *To assess the safety & efficacy of combined phacoemulsification-trabeculectomy versus phacoemulsification - non-penetrating deep sclerostomy (NPDS) in advanced glaucoma. - A randomised control study at A tertiary care centre*
- *Enhancing early glaucoma detection through family screening to reduce glaucoma related blindness*
- *Shared medical appointments randomised trial*
- *The Asia primary tube versus trab (TVT) study*
- *Comparison of new head mount perimeter, C3 visual field analyzer V9 with standard Humphrey's field analyser*
- *Evaluation of the accuracy of an automated algorithm for glaucoma detection from colour fundus photographs taken on a low-cost, slit lamp based Remidio fundus-on-phone camera and a high- tech Topcon camera as compared to the gold standard clinical evaluation*
- *Safety and stability of topical anti-glaucoma medications: a randomised prospective observational study*
- *Non-inferiority of nanodropper-mediated microdrops vs standard drops of 0.5% Timolol Maleate in patients with open-angle glaucoma or ocular hypertension*
- *An open label, multicentre, phase iii, prospective study to evaluate the efficacy, safety and tolerability of triple fixed dose combination of Timolol 0.5% + Brimonidine 0.2% + Brinzolamide*

1% eye drops in patients with open angle glaucoma/ocular hypertension not responding to dual drug therapy

- *A randomised, multicentre, active controlled, parallel-group study to assess efficacy and safety of fixed dose combination of Netarsudil and Latanoprost ophthalmic solution (0.02% w/v + 0.005% w/v) in comparison with Latanoprost Eye Drops 0.005% w/v) in patients with open angle glaucoma or ocular hypertension*
- *A comparison of the efficacy and cardiovascular adverse events between conventional, commercial 0.5% timolol maleate and 10 µL drops of 0.5% timolol maleate using a Nanodropper adaptor in adults with primary open-angle glaucoma or ocular hypertension*
- *Comparison of transpalpebral Easyton tonometer with Goldman applanation tonometer in persons with glaucoma*
- *Improving adherence to follow-up in childhood glaucoma*
- *Family screening of glaucoma*
- *Risk of progression in incident versus prevalent gonioscopic angle closure*

Retina and vitreous clinic

- *Efficacy and impact of artificial intelligence based retinal screening at rural primary eye care centers in southern India*
- *A prospective study to evaluate the early real-world evidence of Brolucizumab in patients with Polypoidal Choroidal Vasculopathy (PCV)*
- *Evaluation of bioclinical markers as predictors of non-responders to intravitreal antiVEGF in diabetic macular edema*
- *A randomised, active-controlled, double-masked, parallel-group, phase 3 study to compare efficacy and safety of ct-p42 in comparison with Eylea in patients with diabetic macular edema*
- *A 96 week, two-arm, randomised, single-masked, multicentre, phase III study assessing the efficacy and safety of brolucizumab 6mg compared to panretinal photocoagulation laser in patients with proliferative diabetic retinopathy*
- *A phase 3, comparative, double-blind, randomised, multicentre study to compare the efficacy, safety and immunogenicity of Sun's Ranibizumab with reference biologic in patients with neovascular age-related macular degeneration*
- *A phase 3, randomised, double-blind, parallel group, multicentre study to compare efficacy, safety, pharmacokinetics, and immunogenicity of BP05 versus EU-Approved Lucentis® in patients with wet (neovascular) age-related macular degeneration*
- *Subjective high-risk patient counselling randomisation project*
- *A study on the differential expression of Piwi-interacting RNAs (piRNA) and altered Piwi-like protein interactions in diabetic retinopathy*
- *Comparison of staging of diabetic retinopathy by an offline artificial intelligence with onsite doctor examination and fundus grading by retina specialist*
- *Improving retinopathy of prematurity telemedicine systems in south India*
- *Genetic characterization of macular telangiectasia in the Indian Population*
- *A double masked, parallel group, randomized, multicentre, clinical study to compare efficacy and safety of Intas Ranibizumab with Lucentis® in patients with neovascular (wet) age-related macular degeneration*
- *Comparative study of Aurolab's multispot green laser with already available green Laser (PASCAL) in proliferative diabetic retinopathy patients.*
- *Accuracy of smart phone based mydriatic fundus camera in the detection of CMV retinitis*
- *Efficacy of Bevacizumab with panretinal photocoagulation versus panretinal photocoagulation alone in proliferative diabetic retinopathy: a sham-controlled trial*
- *To evaluate patient compliance for prone positioning after vitrectomy surgery using an innovative device*
- *Improving RoP telemedicine systems in south india*
- *An extension study to evaluate the long term efficacy and safety of Ranibizumab compared with laser therapy for the treatment of infants born prematurely with retinopathy of prematurity*
- *Statistical modelling and risk assessment of Type 2 diabetes complications in India*
- *EYLEA Study: Structured post-marketing surveillance to collect the safety data of intravitreal aflibercept injection (IVT-AFL) in patients of wet age-related macular degeneration during real world clinical practice.*
- *Scope: ROP Tele screening study*
- *FOCUS Study: Long-term effects of semaglutide on diabetic retinopathy in subjects with type 2 diabetes*
- *INSIGHT Study: A multi centre, randomised, double-masked, active-controlled, comparative clinical study to evaluate the efficacy and safety of MYL-1701P and Eylea® in subjects with diabetic macular edema*
- *VISIBLE Study: A randomised, phase 3, double-masked, parallel group, multicentre study to comapre efficacy and safety of QL1205 versus lucentis in subjects with Neovascular ARMD*
- *INSIGHT Extn Study: A multicentre, extension study to evaluate the safety and efficacy of MYL-1701P in subjects with diabetic macular edema completed MYL-1701P-3001 study*

Neuro-ophthalmology clinic

- *A pharmacogenomics study to identify genetic risk factors for development of ethambutol optic neuropathy*
- *Evaluation of Ethambutol induced optic neuropathy in adults with tuberculosis*

Cataract and IOL clinic

- *Natural history of IOL in eyes with exfoliation syndrome*
- *Visual performance comparison between phacoemulsification and manual small incision cataract surgery in eyes with senile cataract: a prospective randomized clinical trial*
- *Comparative analysis of single dose perioperative sub-conjunctival depotsteroid to routine topical steroids in uncomplicated phacoemulsification*
- *A comparative analysis of simulator based training and traditional wetlab training on the cataract surgical outcome in manual small incision cataract surgery: A prospective study*

- *Validation of cataract detection tool: an artificial intelligence based App on android mobile*
- *Effect of Nd:YAG laser posterior capsulotomy on higher order aberrations*
- *Characterization of adult human lens epithelial stem cells in the maintenance of tissue homeostasis throughout life and their functional status in cataractous lens*
- *To study the safety and performance of high refractive index cast molded hydrophobic IOLs with age-related cataract patients*
- *Effect of preloaded capsular tension ring (CTR) on clinical outcomes during and after phacoemulsification cataract surgery*
- *A prospective, randomized, double blind, comparative study to evaluate the surgical performance of Nanocut and Aurolab's round stock surgical blades for making corneal incisions during cataract surgery*
- *ES 900 penetration in dense cataract*
- *Evaluation of cataract refractive outcomes in eyes with a history of laser vision correction using Zeiss IOLmaster 700 with total keratometry*
- *Complaints and ocular manifestation in post Covid patients (second wave) presenting at tertiary eye hospitals*
- *Reasons for delay in patients with advanced cataracts during the COVID-19 pandemic*
- *Comparative analysis of single dose intraoperative sub-conjunctival depot steroid to routine topical steroids and NSAIDs in phacoemulsification*
- *Evaluation of the Nallasamy formula: A machine learning method for refraction prediction in cataract surgery in Indian eyes*

Uvea

- *A phase III, multicentre, sham-controlled, randomised, double-masked study assessing the efficacy and safety of intravitreal injections of 440 µg DE-109 for the treatment of active, non-infectious uveitis of the posterior segment of the eye*

Health Systems Research

- *Volunteer-driven App-based screening of anterior segment pathologies in remote areas of south India*
- *Smartphone applications in ophthalmology: A quantitative analysis*
- *Expanding scope of teleophthalmology from Vision Centre*
- *Impact of electronic medical record implementation on provider and patient satisfaction*
- *Pattern of uptake of training programmes over two decades at an international ophthalmic training institute in India*
- *Estimation of global cataract surgical rate*
- *Comprehensive eye care work assessment study in Theni district of Tamil Nadu*
- *Investigating the accuracy of a simple, portable refractive error estimation device compared with standard subjective refraction-a diagnostic accuracy study*
- *Impact of a structured mentoring model in enhancing eye care services in the Indian Sub-continent*
- *Compliance on the usage of low vision aids and spectacles and assessment of visual function and quality of life in a southern Indian population.*
- *The diagnostic and economic yield of neuroimaging in Neuro-Ophthalmology*
- *Evidence-based management of out-patient cycle time in a setting with fluctuating demand.*

Ophthalmic Supplies and Equipment

2021 turned out to be a resurgence period for Aurolab from the previous year. Aurolab took great initiatives in implementing the Aurolab 2.0 strategy with customer centricity, reinforcement of centralised Research and Development, strengthening global market presence and employee engagement as the main areas to focus.

Product enhancement

Aurolab recently launched the Aurovue EV Toric with a new dual haptic design manufactured from highly bio-compatible hydrophobic material. This is different from other lens materials, because of its optimum tackiness that helps bind the IOL to the capsule for better rotational stability.

Aurovue EV Toric lens with dual haptic design

New milestone

Aurolab, in collaboration with LAICO offers a one-stop solution to eye hospitals interested in establishing vision centres or improving the already existing ones. Its products and services are offered as a package that will provide the hospitals an enabling environment to start and run the vision centres successfully. The initiative started in June 2019 has received overwhelming response. Over 100 vision centre packages were supplied just during the last year.

Marketing

Aurolab sponsored cataract counselling cubicles for Aravind-Coimbatore to create awareness among patients on the benefits of its premium intraocular lenses.

Two round table meets were organised to introduce Aurolab's Vivid Continuous Focus Vision IOL (CFV IOL); first one was in Bengaluru on March 6 and the second one in New Delhi on March 13. Eminent surgeons shared their experiences of using the Vivid CFV IOL at these meets.

Aurolab participated in the Annual Conference of Ophthalmic Society of West Bengal at Kolkata on November 27-28; Annual Conference of Vitreo Retinal Society of India (Virtual) on December 17-19 and Bihar Ophthalmological Society at Muzaffarpur, Bihar on December 18-19.

Inauguration of Aurolab-sponsored cataract counselling cubicles at Aravind-Coimbatore

Round table meet at Bengaluru

Aurolab stall at the Bihar Ophthalmological Society Conference, Muzaffarpur

Antigen test for staff at Aurolab

Aurolab participated in 12th Annual conference of Association of Community Ophthalmologists of India held in Kolkata on August 21 and introduced its products to the delegates.

International marketing

Aurolab's International Marketing division expanded its distribution network by appointing dealers in new countries and engaged with three more NGOs.

Aurolab has entered new markets in various countries across Australia, South Asia, Central Asia and Western Asia and also registered 40 products in different countries.

A campaign to commemorate Aurovue IOLs crossing one million implants worldwide was conducted successfully. Until last year, Aurolab was selling this product through distributors and it did not have any direct connection with ophthalmologists who actually use the product. Hence as part of the campaign, a website, www.aurovue.com was developed to offer a platform for doctors to interact directly with the Aurolab team and share their feedback on the product. A total of 718 doctors thus registered and 18,753 units of Aurovue were booked after the campaign.

Human resources development

Employee welfare activities

COVID -19 safety initiatives

For the safety and well-being of employees, Aurolab regularly conducted Antigen test to identify COVID positive cases. Vaccination camps for employees were conducted in batches. Antibody tests were done for all day scholar staff with support from the Microbiology team of Aravind Eye Hospital, Madurai.

Launch of AuroOli

Aurolab launched a quarterly, bilingual newsletter named "AuroOli". The newsletter brought out in digital and print versions, intends to showcase the significant happenings at Aurolab, Aurofarm and Nithyatha, such as staff achievements, new initiatives, staff creativity and so on.

Launch of AuroOli and the team behind it

Garden competition and exhibition

Aurolab conducted garden competition and exhibition on January 8, 2022 and prizes were distributed for the winners.

Celebrations

Aurolab celebrated its 30th anniversary in a simple yet elegant manner. Staff members who completed five, ten, fifteen, twenty and twenty five years of service were honoured with service awards.

As always, Pongal was celebrated with great enthusiasm. Staff put up an interesting performance of various traditional dance forms. Various traditional competitions too were conducted.

e-see: Spot solution to reaching the unreached

Aurolab is proud to share that a study on the accuracy of its low-cost, portable, auto refractor, e-see to provide well-tolerated eyeglass prescriptions got published in the Ophthalmology journal. The study was conducted by LAICO and the result proves that there is a strong agreement between subjective refraction and e-see refraction.

The prevalence of uncorrected refractive errors coupled with unavailability of eye care professionals is a major challenge in many countries. e-see offers spot solution for reaching the unreached in many parts of SAARC countries.

Recognitions and Achievements

RECOGNITIONS

Alumni Oration Award 2021

August 21

Dr. P. Namperumalsamy, Chairman Emeritus, Aravind Eye Care System (AECS) was conferred with the Alumni Oration Award 2021 by Sankara Nethralaya Alumni Association.

Daljith Singh Oration Award

July 24

Dr. G. Natchiar, Director Emeritus, AECS was conferred with the Daljith Singh Oration Award at the Annual Conference of All India Ophthalmological Society.

R.P. Dhanda Award

July 24

Dr. M. Srinivasan Director Emeritus, AECS was conferred with the R.P. Dhanda Award at the Annual Conference of All India Ophthalmological Society.

Daljit Singh Gold Medal

December 5

Dr. Aravind Srinivasan, Chief Medical Officer, Aravind-Chennai was honoured with Daljit Singh Gold Medal by the Intraocular Implant and Refractive Surgery, India (IIRSI) at Chennai.

Distinguished Contributor Award - Journal of Vitreo Retinal Diseases

August 23

Dr. R. Kim, Chief Medical Officer, Dr. K. Naresh Babu, Chief, Retina-Vitreous Services and Dr. Sagnik Sen, Retina Fellow were recognised for their outstanding contributions to the Journal of Vitreo Retinal Diseases by the American Society of Retina Specialists.

Dr. R.H.P. Sinha Oration Award

July 25

Dr. Usha Kim, Chief, Orbit and Oculoplasty Services, Aravind-Madurai delivered the Dr. R.H.P. Sinha Oration on the topic, Journey of Hope at the 14th Midterm Conference (virtual) of Bihar Ophthalmological Society.

Dr. Noel Moniz Memorial Oration Award

Cochin, January 23

Cochin Ophthalmic Club presented the award to Dr. R. Venkatesh, Chief Medical Officer, Aravind-Pondicherry in recognition of his outstanding contributions in the field of glaucoma education and innovations. Dr. Venkatesh titled his oration, *Strengthening opportunistic screening for glaucoma: My experiments at Aravind.*

TNOA Recognition for Peer-reviewed Scientific Publication

The following doctors received the Tamil Nadu Ophthalmic Association's (TNOA) award recognising their scientific publications in peer-reviewed journals:

Aravind - Madurai

- Dr. Naresh Babu, Chief, Retina Vitreous Services
- Dr.Madhu Shekhar, Chief, Cataract and IOL Services
- Dr. R. Sharmila, Consultant, Glaucoma Services
- Dr. Karthik Kumar, Consultant, Retina Services
- Dr.Vignesh T.P, Consultant, Retina Vitreous Services
- Dr. Renu P Rajan, Consultant, Retina Vitreous Services
- Dr. Chitaranjan Mishra, Consultant, Retina Vitreous Services

Aravind - Tirunelveli

- Dr. Devendra Maheswari, Consultant, Glaucoma Services
- Dr. Neelam Pawar, Consultant, Paediatric Ophthalmology Services

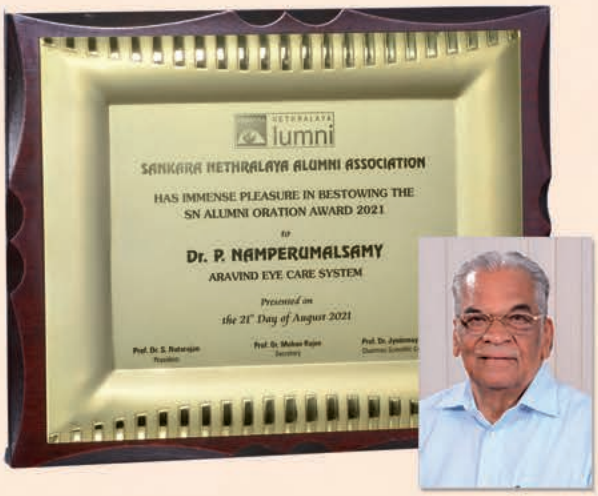
International Agency for the Prevention of Blindness Eye Health Heroes 2021

- Mr. B. Udayakumar, Faculty, LAICO - Category: Changemakers;
- Ms. N. Kasthuri, Biomedical Engineer, Aravind-Madurai - Category: Innovators
- Mr. S. Rajesh, Manager-Outreach, Aravind-Chennai - Category: Future leaders

Silver Jubilee Endowment lecture

Chennai, March 11

Dr.P. Sundaresan, Senior Scientist, Aravind Medical Research Foundation delivered the Silver Jubilee Endowment Lecture of the Department of Genetics, University of Madras. Dr. Sundaresan titled his talk, *Discovery of genes causing blindness and Gene therapy.*



Dr. P. Namperumalsamy honoured with the SN Alumni Oration Award

Dr. R. Meenakshi receiving the certificate of appreciation for Aravind - Tirunelveli

Aravind team with the ASCRS Film Festival Awards

Dr. R.H.P. Sinha Oration Award for Dr. Usha Kim

IIRSI Daljit Singh Gold Medal for Dr. Aravind Srinivasan

Certificate of Appreciation for Aravind-Tirunelveli

Aravind-Tirunelveli received a Certificate of Appreciation for its adherence to the quality certification standards of Chief Minister's Comprehensive Health Insurance Scheme (CMCHIS) – Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (AB-PMJAY). Dr. R. Meenakshi, Chief Medical Officer received the certificate from the District Collector, Thiru. V. Vishnu, IAS on August 15.

It also received another Certificate of Appreciation for exemplary performance under Chief Minister's Comprehensive Health Insurance Scheme on January 26.

Esteemed positions held in ophthalmology societies and journals

August 27

Dr. R. Kim was elected as one among the new council of members and the Vice-President of the Asia Pacific Teleophthalmology Society at the 5th Annual General Meeting.

Dr. K. Naresh Babu was qualified to receive the new Fellow of the American Society of Retina Specialists (FASRS) designation.

Dr.R.Kim and Dr.K.Naresh Babu were elected as Vice-president and Executive Member respectively of Vitreo Retinal Society of India.

ACHIEVEMENTS

Awards at the Annual Conference of All India Ophthalmological Society (Virtual)

June 24-27

- Dr. Bharat Gurnani, Cornea Consultant, Aravind-Pondicherry
  Best Free Paper Award, *Insights into paediatric pythium keratitis – Clinical case series from a tertiary eye care centre.*
  Best Physical Poster Award, *Innovative use of leap motion technology for cataract surgery simulation – A wetlab training model.*
  IJO Best Paper Certificate-*A simple solution to prevent microscope eyepiece fogging and spectacle fogging in COVID-19 era*
- Dr. Bidisha Mahapatra, Cornea Fellow, Aravind -Pondicherry
  Best Free Paper Award, I*nfectious scleritis : Changing profile in a tertiary eye care centre*
- Dr. Kirandeep Kaur, Paediatric Consultant, Aravind-Pondicherry, Best Physical Poster Award in Paediatric Ophthalmology. *Spectrum of pediatric fire cracker injury at a tertiary eye care hospital: A retrospective analysis*
- Dr. M.G. Pavan Kumar, Glaucoma Consultant, Aravind-Pondicherry
  International Hero Award: ASCRS Film Festival
  Video: *Mission impossible – MIGS for the developing world*
- Dr. Manas Nath, IOL Consultant, Aravind-Pondicherry, IJO Best Paper Certificate *Intraocular lens-sling technique*
- Dr. Kulharsh Jaisal, Cornea Consultant, Aravind-Pondicherry. First prize – *Think under the apple tree*
- Dr. Devendra Maheshwari, Consultant, Glaucoma Services, Aravind-Tirunelveli, Best Paper Award - *A novel ab interno technique of AADI tube*
- Dr. Prithvi Chandrakanth, Retina Fellow, Aravind-Coimbatore, Third Prize, *ARC - Think under the Apple Tree.* He also won the AIOS Innovators Forum held on November 7.
- Dr. Prabhu Baskaran, Retina Consultant, Aravind-Chennai. IJO Honour for Peer-reviewed Publications

American Society of Cataract and Refractive Surgery Film Festival Awards -2021

Las Vegas, USA, July 23 - 27

- Dr. K. Veena, Paediatric Opthalmology Services, Aravind-Pondicherry.
  Winner: *New Producer category.*
  Video: *Incremental innovations in wet-lab and surgical training during COVID-19 Pandemic.*
- Dr. S. Ashok Vardhan, Chief Medical Officer, Aravind-Tirupati.
  Winner: *In-house production category*
  Video: *Conquering the sink hole*
- Dr. R. Venkatesh. Runner-up: *Special Interest.*
  Video: *Lessons Learnt during the pandemic – Can we uberise eye care?*
- Dr. V. R. Vivekanandan, Cataract Services, Aravind-Pondicherry.
  Runner-Up: *New Techniques.*
  Video: *MI way for managing hypermature, morgagian cataracts and phacolytic glaucomas*

Winners - Hospital Innovations Showcase

August 14

Dr. Prithvi Chandrakanth and Dr. Hirika Vipul Gosalia, DNB Resident, Aravind-Coimbatore, won the competition organised by Consortium of Accredited Healthcare Organisations.

Award winning innovations:

- Iolscope: smartphone based intraocular lens microscope.
- Magnifix

Winners – Asia Pacific Academy of Ophthalmology (APAO) Quiz Competition

September 7

Dr. Basitali Lakhani, DNB Resident, Aravind – Pondicherry became the First Runner-up in the quiz competition.

Awards at Tamil Nadu Ophthalmic Conference

- Ophthalmic photography competition
  Dr. Ram Sudarshan and Dr. Bhavani, Retina Vitreous Department, Aravind-Madurai won the first and second place respectively
- Captain Subramaniam Best Video Award
  Dr. M.G. Pavan Kumar, Video: *2D animations to teach cataract surgery*
- Coimbatore Ophthalmic Association Best Poster Award
  Dr. Swati Upadhyaya, Glaucoma Clinic, Aravind-Pondicherry. Poster: *Suture GATT with IOL implantation: A cost-effective procedure*
- Best Paper Award – Retina
  Dr. Siddharth Narendran, Aravind-Coimbatore
  Paper: *Geographical disparity in the prevalence of diabetic retinopathy: Role of dietary fatty acids*
- Dr. K. Selvakumari Awards in Neuro-ophthalmology
  Dr. S. Priya, Aravind-Pondicherry, Best Paper Award
  Paper: *Postpartum optic neuropathies: Pitfalls, red flags and differential diagnosis*
  Dr. Rakshita Deepak and Dr. M. Sharmila, Aravind-Coimbatore – First and second runner-up

Delhi Ophthalmological Society International Conference

New Delhi, September 26 - October 3

Dr. Basitali Lakhani won the mega quiz. Dr. Snigdha Mishra, DNB Resident, Aravind-Pondicherry won the second prize in Ophthalmic Oscar.

Best Paper Award – Annual Conference of Oculoplastic Association of India (virtual)

Chandigarh, October 10 -11

Dr. R. Jayagayathri, Orbit and Oculoplasty Department, Aravind-Pondicherry won the award for the paper, *Knowledge, attitude and practice towards mucormycosis among out-patients presenting to tertiary eye care hospitals.*

Awards at the Annual Conference of the Indian Eye Research Group (Virtual)

Hyderabad, October 7-10

- Ms. Sumaiya Sirajudeen, Junior Research Fellow, AMRF. Best Oral Presentation Award, *Differential response of corneal epithelial and stromal cells to the novel chemical cross linker treatment*
- Ms. Waseema Arif, Senior Research Fellow, AMRF Best Poster Award. *Adult stem cells for human retinal pigment epithelium are present in its peripheral region*

Awards at the Annual Conference of Intraocular Implant and Refractive Surgery, India (IIRSI)

Chennai, December 4-5

- Dr. Jebinth Brayan, Consultant, Cataract and IOL Services, Aravind-Coimbatore
  Film Festival Grand Prize Winner – Best in all categories for the video titled, *Phaco-sit*
- Dr. M.G. Pavan Kumar
  Winner – Video Competition, Video title: *3D click art exhibition*
- Dr. S. Vinitha John and Dr. Apurva Nagtode became Runner-up in the category, Best teaching video. Video title: *Dye another day, dyes in ophthalmology*
- Slit lamp Photography
  Winner: Dr. Vinitha Rashme, Cataract and IOL Services, Aravind-Madurai
  Kamatachi Kannan, Supervisor, Clinical Research bagged the first and second runner up awards.
- Smartphone Photography:
  First Runner Up: Dr. Hirika Gosalia
- External Photography:
  Second Runner Up: Mr. Rajkumar, Photographer, Aravind-Madurai

Best Video Award - 14th Congress of the Asia Pacific Vitreo Retina Society (virtual)

December 11-12, 2021

Dr. K. Naresh Babu won the award for the video titled, *Two staged surgery with short term PFCL tamponade for management of retinal detachment secondary to retinal pigment epithelium tear.*

Best Poster Award at Glaucoma Society of India Conference

Guwahati, December 17-19

- Dr. Swati Upadhyaya won Best Poster Award for her poster titled, *Comparison of diurnal intraocular pressure measurement by iCare home tonometer with Goldmann applanation tonometer in a tertiary eye hospital in South India.*

Award at Keracon – Annual Conference of Cornea Society of India (Virtual)

December 10-12

Dr. Kulharsh B Jaiswal, Cornea Consultant, Aravind-Pondicherry won first prize for his innovation, *iOpener*

– *A novel device for ocular examination* in the Corneal innovations session.

Ph.D Awarded

Mr.J.Venkateswaran, Assistant Division Manager – Pharmaceutical Division, Aurolab was awarded doctoral degree by the Tamil Nadu Dr.MGR Medical University for his research on *Design fabrication and validation of fixed combination for anti-glaucoma ophthalmic drugs.*

Awards at EyeTRAIN Conference

LAICO, December 6-10

Best Paper Awards

- Dr. Aswin P.R, Medical Officer, Aravind-Kovilpatti
  Objective Structured Clinical Examination (OSCE) – a novel assessment tool for vision centre AOPs
- Ms. Renuka, Aravind-Coimbatore
  Flipped classroom model – An effective way to teach allied ophthalmic personnel
- Ms. Muthulakshmi R, Aravind-Madurai
  Orthoptic training program at Aravind Eye Hospital

Best Video Awards

- Sangeetha V, Aravind-Chennai. *An account of AOP's role in assisting in cataract phacoemulsification surgery*
- Sudha P M & Ramapriya A, Aravind-Madurai
  Auto-edging progressive lenses

Winners - International Blog Competition

Optometry Fellows of Aravind-Chennai – Abisha.S; Anusiya.D; Sruthi. G and Dillibai. J won first, second, fourth and sixth prizes respectively at the International Blog Competition conducted by Vision Science Academy, United Kingdom.

Mr. J. Venkateswaran receiving the doctoral degree from Thiru.R.N. Ravi, Governor, Tamil Nadu in the presence of Mr. M.K. Stalin, Chief Minister of Tamil Nadu

Winners - Pan India Intercollegiate PG Quiz

Post-graduates of Aravind-Coimbatore, Dr. Jeslin Johnson and Dr. Sreelakshmi. R won the quiz conducted by Bombay Ophthalmic Association.

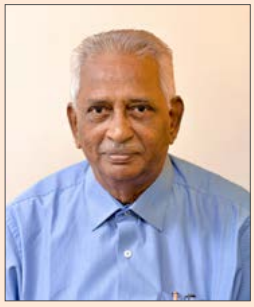
International Society of Stem Cell Research Zhongmei Chen Yong Travel Award and Merit Abstract Award

Ms. Iswarya, Junior Research Fellow, Department of Stem Cell Biology, AMRF received the award for her research titled *Integration of cultured human trabecular meshwork stem cells to TM in a cell loss human anterior segment organ culture model.*

Ophthalmology Research: Lifetime and 2020 Ranking

Dr. M. Srinivasan, Director Emeritus, Aravind Eye Care System found mention in the list of lifetime ranking in ophthalmology research, according to a study conducted by Stanford University.

Dr. S.R. Rathinam, Chief, Uveitis Services, Aravind-Madurai and Dr. Lalitha Prajna, Chief Microbiologist, Aravind-Madurai were listed in the 2020 ranking.



Dr. M. Srinivasan
Director Emeritus, AECS

Dr. S.R. Rathinam
Chief, Uveitis Service

Dr. Lalitha Prajna
Chief, Microbiologist

Aravind Eye Foundation

Aravind Eye Foundation continues to support Dr. G. Venkataswamy's vision to eliminate needless blindness by initiating programs in patient care, community outreach, clinical research and capacity building. Foundation board members have backgrounds in clinical care, research, digital accessibility and inclusion, higher education, venture capital, and management consulting and actively engage in helping Aravind meet its objectives.

Ring of Hope

The Ring of Hope program was started nearly 20 years ago to provide free care to patients with retinoblastoma, an eye cancer which predominantly affects children under the age of five years. Pediatric cancer care still makes up most of our patients, but in recent years Ring of Hope has expanded to cover eye cancers for adults, who are often the main wage earners for their families and whose illness affects the well-being of the entire family.

Treatment for eye cancer requires multiple visits and includes surgery, chemotherapy, radiation, and sometimes prostheses. Follow-up care can take several months and place an extraordinary financial and emotional burden on families. Despite the challenges of the pandemic, this year Aravind treated 40 new patients and provided 1,291 follow-up visits at no cost.

Certain eye cancers have a hereditary element, and genetic testing supports early diagnosis and dramatically improves the odds of a positive outcome for patients and their families. This past year, the foundation supported testing for 63 patients free of cost.

One of those patients was Dasarath. Dasarath and his family are from Trichy, about two hours' drive from Aravind Eye Hospital, Madurai. His father brought Dasarath to Aravind for surgery but couldn't stay because his wife was giving birth. Dasarth's grandmother took over the responsibility of bringing him for follow-up visits at Aravind. Dasarath now has a two-month-old sister - both children had genetic testing for eye cancer and the results are normal. Dasarath's treatment and the genetic screening for both children were provided free of cost through the Ring of Hope.

In addition, Aravind has introduced a new cancer treatment that has been available in western countries for the last 10-15 years and is most effective with early diagnoses. Intra-arterial chemotherapy delivers medicine directly into the tumor and can shrink the tumor faster with fewer side effects. Aravind Eye Foundation is grateful to the Madison Community Foundation's Jaya G. Iyer Endowment for funding this critical program.

Dasarath, one of the Ring of Hope survivors and his grandmother

Rural Vision Centers

More than 90% of basic eye care can be provided locally at a rural vision center, saving patients time and money and improving access to follow-up care, especially for chronic conditions, such as glaucoma and diabetic retinopathy. To help meet the demand for local care, especially during the pandemic, Aravind opened nine new rural vision centers, two supported by the foundation in the villages of Senthamangalam, and Viralimalai. Since 2011, AEF has funded 20 rural vision centers, serving 811,579 patients, recommending 46,968 patients for cataract surgery and prescribing 113,975 pairs of eyeglasses.

Covid-related Programs

One of the unexpected consequences of the second wave of Covid-19 in India was the related rise of Mucormycosis (also called black fungus) among recovered Covid patients. Mucormycosis is an aggressive fungal disease which spreads to the eyes and has a 50%

fatality rate. The treatment is expensive (up to $5,000 per patient) and lengthy. Aravind noticed the increase in cases early on and took steps not only to help its patients but also to educate other health organizations in India through webinars and social media campaigns. To date, Aravind has treated more than 300 cases , with no enucleation (surgical removal of the eye) necessary. Thank you to the Sohum Foundation for their timely and critical support.

Corneal Ulcers

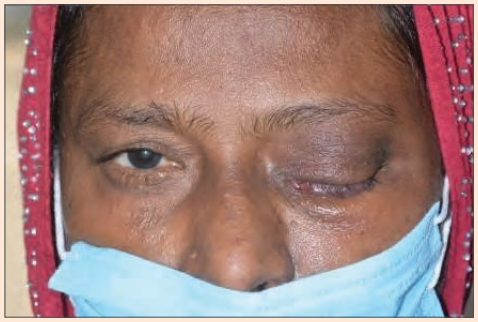
Corneal ulcers generally affect India's working poor-fisherman, farmers, day laborers, who have a small injury that left untreated can cause blindness. Aravind has always provided the initial treatment for free, but medications and travel for follow-up visits are expensive. Without assistance, patients cannot complete their treatment. This year, 634 patients benefited from a generous grant from the Gowri Family.

MLOP Well-being

More than 80% of Aravind's workforce are young women from surrounding villages - they deal with challenges and stress both at work and at home. In response, Aravind has created the MLOP Wellness program, to support the personal and professional development of our most valued employees.

Aravind Eye Foundation is grateful to the many supporters and friends who share the joyful vision of a world without needless blindness.

MLOP well-being programme at Aravind - Tirunelveli



Mrs. Ajitha Begam, housewife and mother, after recovering from Covid-19, was diagnosed in May 2021 with Mucromycosis. Mrs. Begam has diabetes, which is poorly controlled. Aravind was able to treat her without surgery, and today she is healthy and able to do her cooking and stitchery.

"Intelligence and capability are not enough. There must be the joy of doing something beautiful."
- Dr. G. Venkataswamy

ARAVIND EYE FOUNDATION

Partners in Service

Aravind Eye Care System is ever grateful to all its partner organisations, collaborating centres and well-wishers for their whole-hearted support in its mission of providing the gift of sight. Their commitment has helped the organisation positively impact the lives of many visually challenged individuals.

For service delivery, training and more

- *Alcon Laboratories Inc, USA*
- *Aravind Eye Foundation, USA*
- *Bosch India Foundation, Bengaluru*
- *Carl Zeiss Meditec, Germany*
- *CBM International, Germany*
- *Combat Blindness Foundation, USA*
- *Conrad N. Hilton Foundation, USA*
- *Dr. Shroff's Charity Eye Hospital, New Delhi*
- *Federation of Indian Chambers of Commerce & Industry*
- *Fred Hollows Foundation, Australia*
- *Indian Overseas Bank, India*
- *Institute for Health care Improvement, USA*
- *International Agency for Prevention of Blindness, UK*
- *Kaushal Devendra Gupta, Pune, India*
- *Lavelle Fund for the Blind, USA*
- *Lions Clubs International Foundation, USA*
- *Manohar Devadoss, Chennai, India*
- *Mehra Eyetech Private Limited, Puducherry*
- *Novartis, Switzerland*
- *ORBIS International, USA*
- *Rotary International, USA*
- *Schwab Foundation and Social Entrepreneurship, Switzerland*
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- *So-Hum Foundation, USA*
- *Subroto Bagchi, Odisha, India*
- *TATA Lockheed Martin Aero Structures Ltd*
- *The Tamil Nadu Dr. MGR Medical University*
- *Tirumala Tirupati Devasthanams, India*
- *TOMS, USA*
- *Topcon, Japan*
- *Tulsi Chanrai Foundation, Nigeria*
- *University of Michigan, USA*
- *USAID, USA*
- *VISION 2020 - The Right to Sight, India*
- *Vision Aid, Boston*
- *World Diabetes Foundation, Denmark*
- *World Health Organization, Switzerland*
- *XOVA: Excellence in Ophthalmology Vision Award, USA*

For research

- *Alagappa University, Karaikudi, India*
- *Aravind Eye Foundation, USA*
- *Casey Eye Institute, Oregon Health & Science University, Portland, USA*
- *Cognizant Foundation, Chennai, India*
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- *Department of Biotechnology, New Delhi, India*
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- *Geisel School of Medicine at Dartmouth, Dartmouth*
- *India Alliance, Hyderabad, India*
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- *Proctor Foundation, University of California, San Francisco, USA*
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- *Velux Stiftung, Switzerland*
- *Vision Research Foundation, Sankara Nethralaya, Chennai, India*
- *Wellcome Trust, UK*
- *Wilmer Eye institute, Baltimore, Maryland, U.S.A*
- *World Health Organization, Switzerland*

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A. S. Shanmuga Sundari

ADMINISTRATION
Manager-Office
P. Navaneetha Krishnan, PUC

Manager-Administration
M. Muthupandian, PUC

Public Relations Officer
M. Mahadevan, D.Pharm

Manager-Human Resource
R. Lakshmi, MBA

Manager-Quality & Inpatient Services
M. Vikky Kumar, MBA

Manager-Glaucoma Clinic
D. Ranitha Guna Selvi, BPT, MBA

Manager-IT & Systems
P. Thiruvengadam, MA, PGDCA

Manager-Projects & Outreach
P. Hariesh Kumar, MBA

Librarian
E. Perumalsamy, M.Lisc, M.Phil

ARAVIND-COIMBATORE

Chief Medical Officer
Dr. V. Narendran, DO, DNB

RETINA-VITREOUS SERVICES
Chief
Dr. V.R. Saravanan, DO, DNB

Senior Medical Consultant
Dr. V. Narendran, DO, DNB

Medical Consultants
Dr. Rodney John Morris, MS
Dr. George Manayath, MS, FRCS
Dr. Palmeera D Souza, DO, DNB
Dr. A. Ramya, MD
Dr. Prashanth A.S, MS
Dr. Akhila, DO, DNB
Dr. Rohan Suresh Ninan, MS
Dr. Somisetty Gouthamraju, DO, DNB

PAEDIATRIC RETINA AND OCULAR ONCOLOGY SERVICES
Chief
Dr. Parag K Shah, DNB

Medical Consultants
Dr. S. Prema, MS
Dr. Abhishek Das, MS

INTRAOCULAR LENS & CATARACT SERVICES
Chief
Dr. Kalpana Narendran, DO, DNB

Medical Consultants
Dr. S. Guhapriya, DNB
Dr. S. Navaneeth Kumar, MS
Dr. R. Jayanthi, MS
Dr. Amartyajit Mukherjee, MS
Dr. Aiman Ahmed Khan, MS

CORNEA & REFRACTIVE SURGERY SERVICES
Chief
Dr. R. Revathi, MS

Medical Consultants
Dr. Anita Raghavan, DO, FRCS (G)
Dr. P. Mangala, DNB
Dr. Devi Rosette, MS
Dr. Arjun, DO, MS, DNB
Dr. P. Shalini, MS

PAEDIATRIC OPHTHALMOLOGY & ADULT STRABISMUS SERVICES
Chief
Dr. Kalpana Narendran, DO, DNB

Medical Consultants
Dr. C. Sandra, DO, DNB
Dr. Sasikala Elizabeth, DNB
Dr. Amrudha Sindhu, DNB
Dr. Jogitha, MS, DNB
Dr. Vanathi N, DNB
Dr. Muralikrishnan, MS

GLAUCOMA SERVICES
Chief
Dr. Ganesh V Raman, MS

Medical Consultants
Dr. C. Prem Anand, MS
Dr. Mrunali Mohan, MS
Dr. Menaka, DO, DNB
Dr. Sunada Subramanian, DNB
Dr. Abhipsa, DNB

UVEA SERVICES
Chief
Dr. V.K. Anuradha, MD, FRCS

ORBIT, OCULOPLASTY AND OCULAR ONCOLOGY SERVICES
Chief
Dr. Viji Rangarajan, DO

Medical Consultants
Dr. Kavitha Yuvarajan, DO, DNB
Dr. Renu Bansal, DO, DNB
Dr. Sindhuja, MS

NEURO-OPHTHALMOLOGY SERVICES
Chief
Dr. Virna Shah, DO

Medical Consultant
Dr. M. Karthik Kumar, DO

GENERAL OPHTHALMOLOGY
Medical Consultants
Dr. Anita Mohanan, MS
Dr. P. Vivekanand, DO, DNB
Dr. S. Dhanalakshmi, DO
Dr. Senthamilselvi, DO
Dr. A. Srinila, DO
Dr. D. Balasaraswathy, MS
Dr. Bagavath Shalini, MS
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Dr. Jebinth Brayan, MS
Dr. Siddharth Narendran, MS
Dr. Anju Jose, DO
Dr. Naveena R.L., DO, DNB
Dr. Fatima Amanath Assadi, DNB
Dr. Chavan Sneha, DNB

CITY CENTRE - ARAVIND EYE HOSPITAL, COIMBATORE

Medical Consultants
Dr. Rohan Daniel Dawalikar, MS
Dr. Manju Vinythera, DNB
Dr. Suganya, MS

NURSING

Nursing Superintendent
S. Radhika

Assistant-Nursing Superintendent
G.B. Amudha

ADMINISTRATION

Manager-Administration
S. Sangeetha, MHA

Manager-HR
R. Umapriya, MA, PTSTA

Manager-Personnel
R. Jebadurai, BA, PGDPM

Manager-Transport
D. Karthikeyan, DIP, COP

Manager-IT Systems
S. Thirunavukkarasu,M.Sc (IT), PGDSD

Manager-MRD
V. Hemalatha, M.Phil

Manager-Quality Assurance
R. Gautham Kumar, M.Sc. HA

Manager- Patient Care
B. Vignesh, MBA

Manager - Accounts
Krishnasami S. B.Sc, C.A.I.I.B

Electrical Engineer
A.M. Appusamy, D.E.E.E

Civil Engineer
S. Ganapathi, D.C.E

Librarian
K. Alagumani, M.LI.SC, M.Phil

ARAVIND-PONDICHERRY

Chief Medical Officer
Dr. R. Venkatesh, DO, DNB

RETINA-VITREOUS SERVICES

Chief
Dr. Manavi D. Sindal, MS

Medical Consultants
Dr. Pankaja Dhoble, MS
Dr. Ayushi Sinha, DNB
Dr. S. Sivaranjani, MS
Dr. Nikita Sonawane, MS
Dr. Shivangi Singh, DNB
Dr. Arun R, DNB

CATARACT - GENERAL OPHTHALMOLOGY SERVICES

Chief
Dr. V.R. Vivekanandan, MS

Medical Consultants
Dr. D. Balamuruganandaraj, DO
Dr. Merlin Benzy, MS
Dr. R. Swathi, MS
Dr. Naveen Nischal G, MS
Dr. Deepak V.N, MS
Dr. Thamizhselvi D, DNB

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Chief
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Medical Consultants
Dr. P.J. Aruna, MS
Dr. Kunal Mandlik, MS
Dr. Kulharsh B Jaiswal, MS
Dr. Rakesh A. Betdur, MS

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Medical Consultants
Dr. Marie Fredrick Mouttappa, DO, DNB
Dr. Anjali Khadia, MS

GLAUCOMA SERVICES

Chief
Dr. S. Kavitha, MS

Medical Consultants
Dr. Swati Upadhyaya, DO, DNB
Dr. O. Annamalai, DO, DNB
Dr. C.R. Viswaraj, MS
Dr. Usha Tejaswini S, DO, MS, DNB

ORBIT, OCULOPLASTY & OCULAR ONCOLOGY SERVICES

Chief
Dr. R. Jayagayathri, DO, DNB

Medical Consultant
Dr. Dayakar Yadalla, MS, FRCS

NEURO-OPHTHALMOLOGY SERVICES

Chief
Dr. A. Balraj, DNB

UVEA SERVICES

Chief
Dr. S. Bala Murugan, MS

NURSING

Nursing Superintendents
R.V. Selvarani
A. Subbulakshmi

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P. Kanagaraj, BE

Manager-Administration
P. Poobalan, B.COM

Deputy General Manager
S. Subramanian, BE

Manager-Human Resource
A. Sumathi, MBA

Manager-Camp
A. Xavier, B.Sc

Manager-Transport & Security
K. Kaveri, B.A

Manager-Maintenance
P. Thanapal, DCE

Manager-Patient Care & Quality Assurance
K. Kalaivendan, MBA

Manager - Patient Care & Vision Centre
K. Harikrishnan, BA

Manager - IT & Systems
M. Ashok, MCA

Manager - Stores
S. Vadivelmurugan, B.SC

ARAVIND-SALEM

Chief Medical Officer
Dr. B. Manohar Babu, MS

CATARACT & UVEA SERVICES
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RETINA-VITREOUS SERVICES
Medical Consultant
Dr. K. Hemalatha, MS

CORNEA & REFRACTIVE SURGERY
Medical Consultants
Dr. J. Anuja, MS,
Dr. Lokeshwari, MS
Dr. Nikhil Jain, DO, DNB

GLAUCOMA SERVICES
Medical Consultants
Dr. Pavithra S, MS
Dr. Vishuvardhan Reddy B, MS

GENERAL OPHTHALMOLOGY SERVICES
Medical Consultants
Dr. M. Lavanya, MS
Dr. Keerthana, MS
Dr. Uma, MS
Dr. Malligarjun B, MS

MICROBIOLOGY
Medical Consultant
Dr. Suneetha V, MD

ANAESTHETIST
Medical Consultant
Dr. Citrarasu M, DA

NURSING SUPERINTENDENT
V.S. Ramya

ADMINISTRATION
Manager-Patient Care
I. Seran, MBA (HM); FEHM
Manager Accounts & Finance
R. Sakthivel, BA
IT & Systems
A. Kumaresan, BCA

ARAVIND-CHENNAI

Chief Medical Officer
Dr. S. Aravind, MS, MBA

RETINA-VITREOUS SERVICES
Chief
Dr. Anand Rajendran, DNB, FRCS
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Dr. Indu G, MS
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Medical Consultants
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Dr. Vempati VSN Jyothi, MS
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Dr. Chetana Lingam, MS

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Medical Consultants
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Dr. Saranya, DO, DNB
Dr. Akila C, MS

GLAUCOMA SERVICES
Medical Consultants
Dr. Neethu Mohan, MS
Dr. Madhuri, MS, DNB
Dr. V. Prasanna, MS, FICO
Dr. Nithila EG Paul, DO, DNB
Dr. Preethi G, DNB

UVEA SERVICES
Medical Consultant
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ORBIT, OCULOPLASTY AND OCULAR ONCOLOGY SERVICES
Medical Consultants
Dr. Jayashree, DO, DNB
Dr. Gayatri Fulse, DO, DNB
Dr. Anupama Joy, DO, DNB
Dr. Vikas Menon, DNB
Dr. Yasar Safar, MS

NEURO-OPHTHALMOLOGY SERVICES
Medical Consultants
Dr. Nirmala Devy, DO
Dr. Madhumita Gopal, DO, DNB

GENERAL OPHTHALMOLOGY
Medical Consultants
Dr. Anuradha, DNB
Dr. Aarthy, MS
Dr. Hasini, MS
Dr. Swathija, MS
Dr. Priyanka S, MS

ANAESTHETIST
Dr. Jacintha, DNB, DA

PHYSICIANS
Dr. Joeimon, MD, DMM
Dr. J.P. Janish Prabhakar, MBBS
Dr. Manoprakash Manoharan. MBSS

ADMINISTRATION
Manager-Administration
Revathy Kannadhasan, BBA, MBA
Manager – Community Outreach & Eye Bank
Rajesh, B.SC, MSW, PG.DIPLOMA
Manager - Quality Assurance
Riyah Jaitika, PGDHM
IT & Systems
Ajmal Hussain, BCA, DCE

ARAVIND-TIRUPATI

Chief Medical Officer
Dr. S. Ashok Vardhan, DO, DNB

RETINA-VITREOUS SERVICES

Chief

Dr. Y. C. Venugopal Reddy, MS

Medical Consultants

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Dr. A. Joash Rijey, DNB

Dr. Deepak Anthwal, MS

INTRAOCULAR LENS & CATARACT SERVICES

Chief

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Medical Consultants

Dr. Umakanth, MS

Dr. P. Santosh, DO

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Medical Consultants

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Dr. Anusha Koduru, DNB

PAEDIATRIC OPHTHALMOLOGY & ADULT STRABISMUS SERVICES

Chief

Dr. Sathya T. Ravilla, MS

Medical Consultant

Dr. Mahima Bankar, MS

GLAUCOMA SERVICES

Chief

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Medical Consultants

Dr. Sreenath, DO, DNB

Dr. Keerthi Gayam, DNB

NEURO OPHTHALMOLOGY SERVICES

Medical Consultant

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GENERAL OPHTHALMOLOGY SERVICES

Medical Consultants

Dr. D.V. Navaneetha, DNB

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Dr. Bollu Keerthi, MD

Dr. Borra Prashanti, MD

ADMINISTRATION

Manager-Administration & Finance

K. Kesava Kumar, B.SC. B.ED, L.L.B,

Manager-Patient Care

Damien Jacob, MBA

Manager-Public Relation

N.S. Ravi, M.SC., HDC

Manager-Maintenance

K. Natarajan, BE

ARAVIND-TIRUPUR

Medical Consultants

Dr. Hridya Mohan, MS

Dr. Deepa, DNB

Medical Officer

Dr. Harithra S, MBBS

Manager

Balaji T, BE, MBA

ARAVIND-DINDIGUL

Medical Consultants

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Dr. V.R. Saranya, MS

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Dr. Sangavi Samritha Selvi P, MS

Manager

R. Balasubramani, M.SC.

ARAVIND-TUTICORIN

Chief Medical Officer

Dr. G. Anitha, DO, DNB

Medical Consultant

Dr. K. Preethi, DO

Manager-Patient Care & Administration

N. Mohammed Ghouse, MBA

Manager-Office

A. Nammalvar, B.Sc

ARAVIND-UDUMALPET

Medical Consultants

Dr. Duggirala Varun, MS

Dr. Vijayevarshcini D, DNB

Dr. Rajpal Narayan Laxman, DNB

Manager-Office

V. Mouna Gurusamy

ARAVIND-KOVILPATTI

Medical Consultant

Dr. Tanya Nitin Balakrishnan, MS

Manager - Office & Accounts

A. Chandran, B.COM

Aravind Integrated Eye Bank Services (AIEBS)

Director

Dr. M. Srinivasan, MS, DO, FAMS

ROTARY ARAVIND INTERNATIONAL EYE BANK, MADURAI

Technical Director

Dr. Lalitha Prajna, MD, DNB

Medical Director Designee

Dr. Manoranjan Das, DNB

Manager

D. Saravanan, MSW, M.Phil, MBA (HR) PGDC

ROTARY ARAVIND EYE BANK, TIRUNELVELI

Medical Director

Dr. R. Ramakrishnan, MS, DO

Medical Director Designee

Dr. V. Anitha, DNB, FAICO

ARAVIND-IOB EYE BANK, COIMBATORE

Medical Director
Dr. V. Narendran, DO, DNB
Medical Director Designee
Dr. Anitha Raghavan, DO, FRCS (G)

ARAVIND EYE BANK ASSOCIATION OF PONDICHERRY

Medical Director
Dr. Josephine Christy S, MS
Medical Director Designee
Dr. Kunal A. Mandlik, MS

ARAVIND EYE BANK, CHENNAI

Medical Director
Dr. K. Tiruvengada Krishnan, DNB
Medical Director Designee
Dr. Seema Ramakrishnan, DO, DNB, FICO

Lions Aravind Institute of Community Ophthalmology

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Executive Director
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Senior Faculty
B.S. Ganesh Babu, M.COM
R. Meenakshi Sundaram, MHM
V. Vijayakumar, MSW, M.Phil
R. Suresh Kumar, MA, PGDHM
Sanil Joseph, MHA, M.SC
Dhivya Ramasamy, MBA
Mohammed Gowth, MA, PGDHM
A. Syed Ali, MA
D. Yesunesan, MSW
Faculty
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Prof. K. Dharmalingam, M.Sc, Ph.D
Advisor-Research
Prof. VR. Muthukkaruppan, M.Sc, Ph.D

MOLECULAR GENETICS

Senior Scientist
Dr. P. Sundaresan, M.Sc, Ph.D
Scientist
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IMMUNOLOGY & STEM CELL BIOLOGY

Scientists
Prof. VR. Muthukkaruppan, M.Sc, Ph.D
Dr. Gowripriya Chidambaranathan, M.Sc, Ph.D
Ramalingaswami Fellow
Dr. Anwar Azad P, M.Sc, Ph.D

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Scientist
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Clinician Scientists
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Dr. S.R. Rathinam, FAMS, PH.D
Ramalingaswami Fellow
Dr. Swagata Ghosh, M.Sc, Ph.D
Associate Faculty
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BIOINFORMATICS

Scientist
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PATHOLOGIST

Dr. R. Shanthi, MD

Aurolab

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Managing Director
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R. Sundara Ganesh, BE
Division Manager-Suture Needle
R.K. Ramnath, BE
Division Manager-Surgical Blade
S. Saravanan, BE
Division Manager- Equipment
Dinesh. B.R., ME
Marketing Manager-Exports
N. Vishnu Prasad, MHM, MBA
Marketing Manager-Domestic
S. Sivanand, B.Sc, MBA
Manager-Regulatory Affairs
R. Krishna Kumar, B.Pharm, MS
Senior Manager-Human Resources
S. Franklinraja, MA, (P.M & IR)
Manager-Human Resources
V. Swetha, MBA
Manager-IT & Systems
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