

activity report 2017-18

ARAVIND EYE CARE SYSTEM

Vision: Eliminate needless blindness

2018 - BIRTH CENTENARY YEAR OF DR. G. VENKATASWAMY



*One soul's ambition lifted up the race;
A power worked, but none knew whence it came.
The universal strengths were linked with his;
Filling earth's smallness with their boundless breadths
He drew the energies that transmute an age.*

- Sri Aurobindo, 'Savitri'



DR. G. VENKATASWAMY
1918 - 2006

The genius of the man was in using an adjective, 'needless' to give a context to the scourge of blindness.

It gave energy, hope and inspiration to scores of ophthalmologists to combat it.

*And for that and much more,
we celebrate his life.*

Dr. G. Venkataswamy, Aravind's Founder Chairman was born on October 1, 1918. The year 2018 marks his birth centenary. As we take stock of the achievements Aravind has made in the last year, we reminisce the great visionary's life - how from simple beginnings, he developed Aravind into a sophisticated system dedicated to compassionate service.

Several of Dr. V's photographs are interspersed throughout this report to remind and inspire all those who have dedicated their lives to his mission of eliminating needless blindness.



What now we see is a shadow of what must come.
The earth's uplook to a remote Unknown
Is a preface only of the epic climb
Of human soul from its flat earthly state
To the discovery of a greater self
And the far gleam of an eternal Light.
This world is a beginning and a base
Where Life and Mind erect their structured dreams;
An unborn Power must build reality.
A deathbound littleness is not all we are:
Immortal our forgotten vastnesses
Await discovery in our summit selves;
Unmeasured breadths and depths of being are ours.

- Sri Aurobindo, from Savitri, Book I, Canto IV

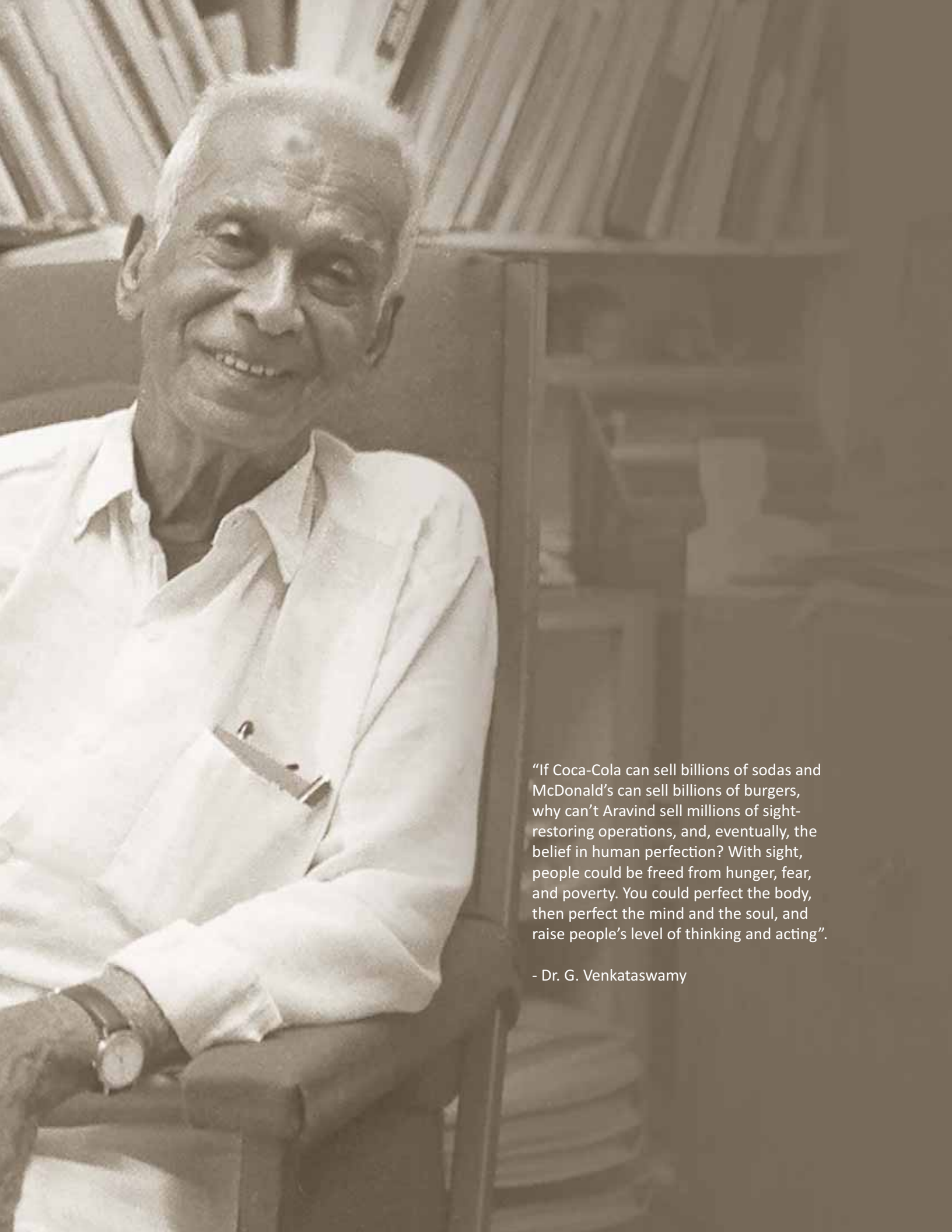
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Senthil Kumar P, Aravind-Coimbatore
Thirunavukarasu, Sigmaa photo, Madurai





"If Coca-Cola can sell billions of sodas and McDonald's can sell billions of burgers, why can't Aravind sell millions of sight-restoring operations, and, eventually, the belief in human perfection? With sight, people could be freed from hunger, fear, and poverty. You could perfect the body, then perfect the mind and the soul, and raise people's level of thinking and acting".

- Dr. G. Venkataswamy

ARAVIND

EYE CARE SYSTEM

VISION

.....
Eliminate
needless blindness . .

EYE CARE SERVICES

MISSION:

. . 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 making quality ophthalmic products
affordable and accessible to the vision
impaired worldwide

EYE CARE SERVICES

In the year-ending March 2018,

4,183,234 outpatient visits were handled
478,028 surgeries and laser procedures were performed.

Eye Hospitals

Tertiary Eye Care Centres - 6
(Speciality Care, Research & Training)

Madurai 1976 | Tirunelveli 1988

Coimbatore 1997 | Pondicherry 2003

Salem 2011 | Chennai 2017

Secondary Eye Care Centres - 6
(Cataract Services, Speciality Diagnosis)

Theni 1985 | Tirupur 2010 | Dindigul 2010

Tuticorin 2012 | Udumalpet 2012

Coimbatore City Centre 2014

Community Eye Clinics

Out-Patient Eye Care Centres
(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

Primary Eye Care Centres - 67
(Comprehensive Eye Examination)

Outreach Programmes

(Free Eye Camps)

More than 2,500 camps were conducted through which 577,350 patients were screened and 92,022 surgeries were performed *

Eye Bank Services

Aravind Integrated Eye Bank Services

5,886 eyes were collected and 2,512 eyes were utilised for surgery*

EDUCATION AND TRAINING

Aravind Postgraduate Institute of Ophthalmology
Lions Aravind Institute of Community Ophthalmology (LAICO)

Around 1,000 candidates were trained
124 papers published*

RESEARCH

Aravind Medical Research Foundation
Dr.G.Venkataswamy Eye Research Institute

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

18 research papers published*

CONSULTANCY AND CAPACITY BUILDING

Lions Aravind Institute of Community Ophthalmology (LAICO)

Sharing best practices of Aravind | Advocacy in eye care

344 hospitals from 29 countries including India receive consultancy services in eye care management

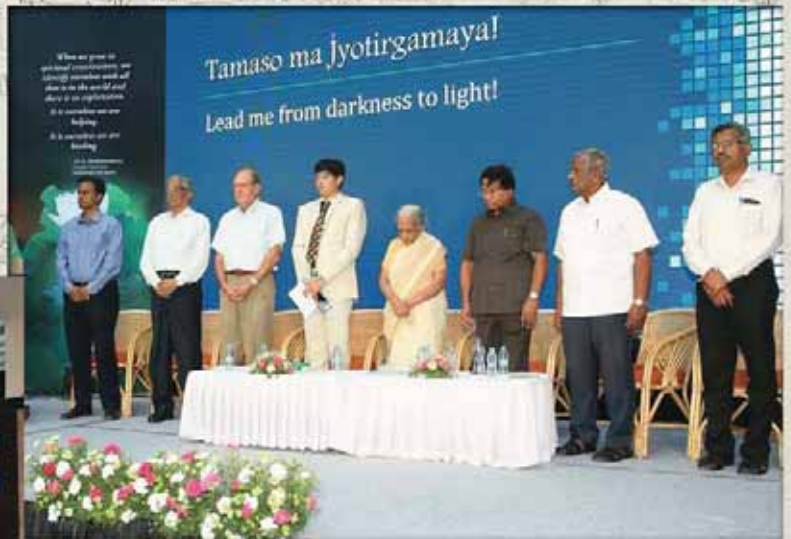
OPHTHALMIC SUPPLIES AND EQUIPMENT

Aurolab

Intraocular lens | Pharmaceuticals | Suture needles | Equipment | Surgical blades | Special products

Products are exported to more than 160 countries worldwide

**Statistics mentioned is for the year ending March 2018*



At the inaugural function



2018 marks the birth centenary year of Dr. V. It is time to reminisce on the deeper purpose underlying the establishment of Aravind Eye Hospitals. Beyond the obvious goal of eliminating needless blindness, Dr. V had a higher purpose and greater aspiration for Aravind.

He describes this in his journal, where he meticulously recorded his thoughts and reflections –

'Aravind Hospital aims at bringing higher consciousness to transform mind and body and soul of people. It is not a mechanical structure repairing eyes. It has a deeper purpose'

For Dr. V, working at Aravind was all about –

"How to make this work a field for inner growth and perfection"

Infrastructure Development

The infrastructure continued to grow both at the tertiary and primary levels, to deepen the reach and accommodate increasing demand for services. During the year, seven vision centres were added and the much awaited hospital in Chennai was inaugurated on 30th September 2017, by Dr. Santha, a globally respected oncologist. The inaugural function was also graced by the presence of Prof. Alfred Sommer, Dean Emeritus, Johns Hopkins Bloomberg School of Public Health; Dr. Viswanathan, the Chancellor of VIT and Dr. Radhakrishnan, Health Secretary of Government of Tamil Nadu. The half a million square feet facility will cater not only to the people living in the districts around the hospital but also to patients from other states and other countries.

On 21st May 2017, the foundation stone of the Sri Venkateswara Aravind Eye Hospital at Tirupati was laid by N. Chandrababu Naidu Garu, the Chief Minister of Andhra Pradesh in the presence of senior management team of Aravind. Construction is progressing as per plan and the hospital is scheduled to start functioning in the later part of 2018. Over the years, Aravind has built good will

Honorable Chief Minister of Andhra Pradesh Sri. Nara Chandrababu Naidu Garu at the foundation stone laying ceremony for the Sri Venkateswara Aravind Eye Hospital at Tirupati



Highlights



Prof. Alfred Sommer delivering the Dr. G. Venkataswamy Endowment Oration

and trust amongst patients coming from bordering districts of Andhra Pradesh. A number of patients from the southern districts of the state - Chittoor, Cuddapah, Nellore, Anantapur, and Ongole have been visiting Aravind Eye Hospitals for their eye treatment. This number is increasing year after year. This facility will provide easier access to those already coming and for the 14 million people living in these districts. Land has been procured in the town of Tanjore, a temple town in central

Tamil Nadu, which as per Aravind's growth plans is likely to be the last tertiary centre for the state of Tamil Nadu.



In commemoration of Dr.V's birth centenary

Several events are planned and several of them already underway, since October 2017. Conferences and CMEs of national importance, such as the 28th Annual Conference of Oculoplastic Association of India in October 2017; 7th Biennial Symposium on Diabetic Retinopathy in January 2018 and the All India Ophthalmic Conference in February 2018 were held.

Dr. G. Venkataswamy Endowment Oration

As with every year, the highlight of October Summit 2017 was the Dr. G. Venkataswamy Endowment Oration. This year, Prof. Dr. Alfred Sommer, Dean Emeritus, Johns Hopkins Bloomberg School of Public Health was honoured, in recognition of his outstanding contributions to the prevention of needless blindness in the developing world. Dr. Sommer delivered the oration titled 'An Ophthalmic-Public Health Journey'.

Dr. P. Namperumalsamy, Mr. Subroto Bagchi and Dr. V. Narendran at the inauguration of All India Ophthalmic Conference at Coimbatore



The Aravind Way

It was Dr. V's aspiration for inner growth and perfection that guided the policies, systems, and day-to-day operations at Aravind that ensure all patients are cared for, regardless of their ability to pay. At Aravind, there is a conscious effort to remember and nourish that which has made Aravind grow from its humble beginnings to one of the largest eye care organisations in the world. It is not the technology, skills or competencies, but the constant quest for perfection and growth with integrity that has made it the organisation it is today.

While the guiding principles and aspirations that define the 'Aravind Way' are something that everyone at Aravind follows, as the organisation keeps growing, so does the risk of the 'Aravind Way' becoming a mere system to mechanically abide by. For this reason, it was decided that the organisation properly defines and diffuses the 'Aravind Way' to ensure that it becomes a conscious cornerstone for all those involved with Aravind. With the funding support of the FETZER Institute and the involvement of long time volunteers, Prof. Fred Munson, Ms. Meg Lueker and many others within the organisation,

the Aravind Way was decoded into seven driving principles.

- Making eye care accessible to all
- Quality and continuous improvement
- Patient centricity
- Self-reliance
- Staff centricity
- Frugality
- Sharing

These principles were then further validated through a series of intense workshops, which also uncovered areas that may help us stay true to the Aravind Way.

Pioneering Contribution to the Practice of Clinical Ophthalmology

Aravind, over the years, pioneered effective ways of delivering eye care to the community, and continually shares these with the rest of the world. However, clinical care to patients was based on the knowledge and procedures developed and advocated by others from across the world. As one of the largest providers of clinical care, Aravind has begun making contributions to the practice of ophthalmology. Initially, it was in the field of corneal ulcers, by providing guidelines on how to manage early forms of corneal ulcers in the

The Aravind Way workshop



community and an intervention protocol in the hospital setting, for more advanced ulcers. This year, Aravind caught global attention with its publication on Aurolab's intracameral antibiotic - moxifloxacin, which has dramatically reduced infection rates in 600,000 cataract surgeries. Aravind's evidence showed that with the use of this surgical adjunct, there was a 75% reduction in endophthalmitis, the most dreaded complication in cataract surgeries. This landmark study was published in the journal 'Ophthalmology' in July 2017.

New Initiatives

In collaboration with the Mindtree Foundation, Aravind-Madurai developed two android applications: VIKAS - to assess and habilitate children with cognitive visual dysfunction, and Dignify - for persons with profound visual impairment. These applications can be downloaded for free from the Google play store onto any Android mobile phone or tablet. It was at a function held in LAICO on the 22nd March 2018 that the Mindtree CEO & Managing Director, Mr. Rostow Ramanan, handed over these applications to the Vision Rehabilitation team at Aravind.

Finding New Ways to Reach Out

This year, Aravind added a novel outreach approach to screen the truck drivers of Indian Oil Corporation (IOC). On any given day, about 60,000 trucks ferry highly flammable products across the length and breadth of India. When these trucks have an accident, it has disastrous consequences. To minimise such events, the leadership of IOC approached Aravind so that all 75,000 of their drivers may receive an eye sight screening and receive any remedial action that may be needed. To help accommodate this, an intervention approach and a plan of action was developed, which was then piloted in two states - Tamil Nadu and Karnataka. In Tamil Nadu, Aravind provided this service at the various depots of IOC. In Karnataka, Aravind used the Dr. MM Joshi Eye Hospital to facilitate doing all the necessary screenings. For other states in the country, Aravind is arranging similar hospital linkages so that this service may be provided using local resources in a sustainable manner in the years to come.

Milestones and New Frontiers

LAICO completed 25 years of global work in promoting effective management in eye care

At the launch of 'VIKAS' and 'Dignify'



services and best organisational practices. This event was formally celebrated on the 18th August 2017 when Aravind had the privilege of hosting the Lions Clubs International Foundation's President, Dr. Naresh Aggarwal.

LAICO's work to enhance the capacity of other eye hospitals has peaked this year, with 54 eye hospitals being actively mentored under different funding initiatives. The annual October Summit focused on relevant and less-explored topics in eye care that would enable care givers to deliver their service in a more productive way. A series of workshops were conducted, such as one on how best to build internal staff capacity in research.

Research Updates

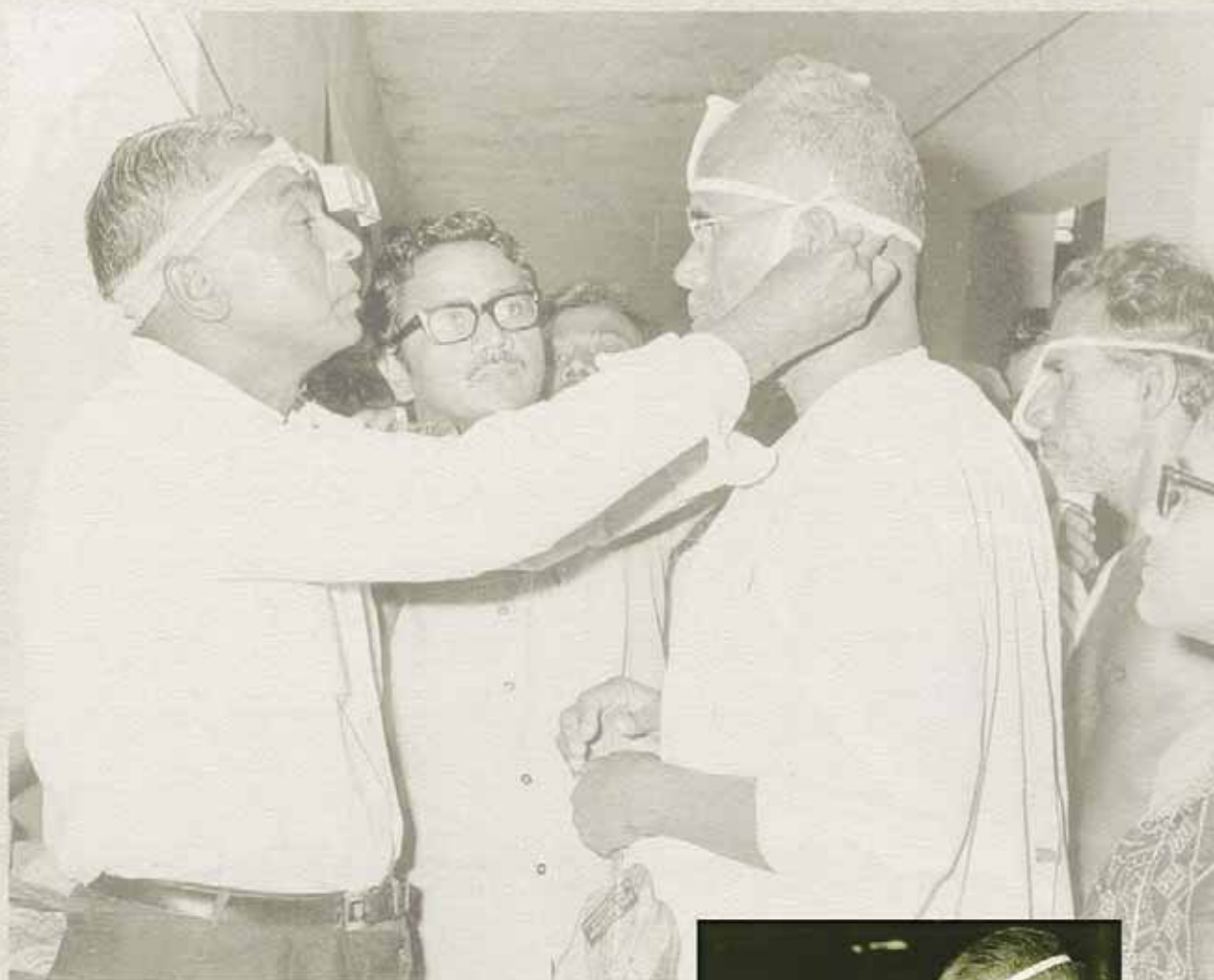
A multi- institutional Indo-UK study on Diabetic Retinopathy (DR) has been initiated. This study will validate 12 circulating protein markers that were discovered at the AMRF. Patients at different stages of DR in both Indian and UK cohorts will be recruited for this study. The expected outcome is to develop a simple field test to identify DR patients who are at high risk of developing sight threatening conditions.

Growing in Competence

Aurolab, which made the intracameral moxifloxacin commercially available, and affordable, went on to release two new significant products. One was Humming Bird, an advanced but low priced Phaco machine, which minimizes the cost of machine related consumables for each surgery thanks to its unique design. By reducing the cost barrier, the hope is that this machine will pave way to phaco surgery becoming the preferred surgical technique for all cataract surgeries. The other product, e-See, is an easily portable handheld autorefractor, which in a matter of minutes can generate a prescription for glasses. Given the number of people who require glasses - one in four persons require refractive error correction, which has to be retested for every other year - this device hopes to facilitate access to receiving a prescription, not to mention freeing up man-power for other ophthalmic tasks. Aurolab continues to enhance its existing product lines. Amongst the many such, a notable one is the multifocal IOL which received good response from the ophthalmic community and patients. This is also a testament to Aurolab's growing competence in in-house design and development.

Dr. Chandrasekar Shetty, Ln. Gopalakrishna Raja, Mr. R.D. Thulasiraj, Dr. R.D. Ravindran with the Lions Clubs International Foundation's President, Dr. Naresh Aggarwal and other Lions leaders





The number of patients that have visited Aravind has grown marginally this year, probably as an outcome of a conscious focus to complete all investigations, diagnosis and treatment in a single visit, to minimize repeat visits as much as possible. The year ended with 4,183,234 outpatient visits and 478,028 surgeries, lasers and intra ocular injections being performed.

EYE HOSPITALS

The much awaited Aravind Eye Hospital in Chennai was formally inaugurated on September 30, 2017. The hospital, which is the biggest of Aravind's facilities, saw about 31,500 new patients and performed about 2,150 surgeries in the first six months. Consistent with Aravind's mission of taking eye care to the doorsteps of those in need, community outreach activities were started in March 2018. A Diabetic Retinopathy screening camp and school children screening camps were also conducted which received a huge response.

The construction of Aravind's dream project in Tirupati is in full swing and is expected to open in October 2018. It is located on a sprawling seven acre land allocated by the Tirumala Tirupati Devasthanams (TTD). With a built up area of 300,000 square feet, this facility will serve the eye care needs of 14 million population of Chittoor, Nellore, Kadapa, Anantapur and neighbouring districts.

Operation theatre at Aravind-Chennai



Chanrai Aravind Eye Hospital in Abuja, Nigeria

In collaboration with Tulsi Chanrai Foundation, an international NGO working towards providing healthcare to the rural population of Nigeria, Aravind is all set to open an eye care hospital in Abuja in October 2018. The hospital will follow the proven cross-subsidising, yet sustainable model of Aravind. Two ophthalmologists and 18 nursing staff selected for this hospital are currently undergoing training at Aravind-Coimbatore and another batch will be joining in a couple of months.

As new facilities are coming up, Aravind's existing centres have also achieved some notable milestones. Aravind-Tirunelveli and Pondicherry completed 30 and 15 years of service respectively, and continue to provide quality eye care to millions of people.

All the Aravind centres are gearing towards NABH accreditation. Aravind-Madurai completed the pre-

Patient Care

Performance 2017 - 2018

	Total	Madurai	Theni	Tirunelveli	Coimbatore	Pondicherry
OUT-PATIENT VISITS						
HOSPITALS						
Paying (New+Review)	2,225,418	664,199	100,239	327,815	397,033	303,440
Free (New+Review)	612,099	202,015	25,148	83,436	125,816	104,092
VISION CENTRES	586,418	245,310	66,704	128,958	50,085	68,502
COMMUNITY EYE CLINICS/CITY CENTRES	196,446	109,169	23,177	32,046	-	32,054
OUTREACH						
Comprehensive camps	349,620	103,408	17,053	47,250	89,933	75,360
Diabetic Retinopathy screening camps	85,349	12,256	3,308	3,214	60,548	5,146
Workplace refraction camps	62,349	15,083	4,071	11,515	12,606	12,412
School children examined by Aravind staff*	50,160	13,326	1,840	6,193	5,110	21,198
Paediatric eye screening	7,060	-	1,644	1,469	1,627	2,320
Mobile van refraction camps	8,315	-	-	-	7,484	-
Total Out-patients through Outreach*	562,853	144,073	27,916	69,641	177,308	116,436
TOTAL OUT-PATIENT VISITS	4,183,234	1,364,766	243,184	641,896	750,242	624,524
SURGERIES						
Paying	244,629	86,108	8,654	35,004	48,749	35,120
Free walk-ins	138,446	52,555	4,400	16,214	29,473	22,064
Outreach	94,953	33,009	2,731	11,011	22,830	20,611
TOTAL SURGERIES	478,028	171,672	15,785	62,229	101,052	77,795

While Aravind team screened 50,160 children, an additional 425,124 children were screened by teachers/vision screeners and

entry-level assessment of NABH certification and the process is underway in Tirunelveli, Pondicherry and Coimbatore. NABH accreditation significantly improves the credibility of Aravind, and is in line with keeping patients at the centre, upholding their rights and ensuring their safety.

Cornea Services

At Aravind-Madurai, Descemet's Membrane Endothelial Keratoplasty (DMEK), an advanced lamellar keratoplasty surgery will soon be performed on a routine basis. A special clinic dedicated to ocular surface management was started, which offers specialised care for patients affected by chemical injuries or Dry eye.

The department continues to be a front runner in the field of infectious keratitis; having already developed collaborations with existing international partners and constantly seeking to forge new relationships with likeminded, globally renowned, institutions. At Aravind-Coimbatore, the department has expanded its therapeutic modalities to give comprehensive and updated services with a whole range of keratoplasties, including: anterior and posterior lamellar procedures, ocular surface reconstructive surgical procedures, and monitored immunotherapies for immune mediated external ocular diseases. It also strengthened its research activities by starting many in-house and in collaboration clinical studies.

Tirupur Dindigul Salem Tuticorin Udumalpet CBE CC Chennai

51,023	75,951	135,421	58,636	39,554	36,144	35,963
11,365	-	21,981	9,611	16,766	-	11,869
12,493	-	-	-	14,366	-	-
-	-	-	-	-	-	-
-	-	11,242	4,272	802	-	300
-	-	627	-	-	-	250
4,447	-	-	-	2,215	-	-
25	-	1,919	-	435	-	114
-	-	-	-	-	-	-
-	-	831	-	-	-	-
4,472	-	14,619	4,272	3,452	-	664
79,353	75,951	172,021	72,519	74,138	36,144	48,496
2,806	4,580	13,041	2,712	2,752	1,986	3,117
2,163	1,192	4,132	1,442	3,596	-	1,215
679	-	2,839	485	736	-	22
5,648	5,772	20,012	4,639	7,084	1,986	4,354

Over the last 25 years I've had the privilege of visiting the boardrooms and shop-floors of some quite remarkable organisations around the world. Whilst some might be more customer focused (Ritz-Carlton), more profitable (Google) more innovative (Lego/Tesla), as socially impactful (Grameen Bank) or more disruptive (Netflix) absolutely none has achieved such incredible impact on such multiple metrics.

This is for me, why Aravind Eye Care System is arguably the world's finest organisation.

-Adrian Simpson,
Co-founder & Chief Connector
Wavelength

found to be normal. This takes the total outreach screening to 987,977.

Uvea Services

Uveitis, an ocular condition known for its systemic and ocular morbidity, may not respond to the standard care of treatment - steroids and immunosuppressives for some patients. These patients may need newer biologics to control their inflammation. Previously these patients were referred to rheumatologists for consultation and treatment - which is a costly affair by Indian standards, where insurance does not cover these expenses. To overcome this, Uvea Services at Aravind-Madurai has started using newer biologics within the clinic itself. The clinic is currently utilising enhanced depth imaging optical coherence tomography, a non-invasive procedure

which gives a better understanding and management of choroidal diseases. Optos, the latest addition to the clinic's armamentarium helps the team better assess inflammation in the retinal periphery. Aurolab Aqueous Drainage Implantation is an additional product that has helped quite a few patients with uncontrolled uveitic glaucoma, regain their vision.

Glaucoma Services

Precision in the measurement of intraocular pressure (IOP) is a pre requisite for any glaucoma care pathway and Aravind is constantly seeking to raise the bar on appliances used for measurement and diagnoses. Perkins handheld applanation tonometry is regarded as

Surgery Details 2017 - 2018

	Total	Madurai	Theni	Tirunelveli	Coimbatore	Pondicherry
Cataract surgeries	295,678	106,811	10,707	35,695	59,197	47,978
Trab and combined procedures	6,382	2,131	61	1,434	1,399	1,010
Retina and Vitreous surgery	15,637	5,843	9	1,316	5,346	2,546
Squint correction	2,408	1,165	0	287	757	195
Keratoplasty	2,362	842	4	359	667	425
Pterygium surgery	6,519	2,383	321	526	1,349	1,148
Ocular injuries	1,901	505	10	273	541	359
Lacrimal surgeries	5,540	2,852	56	576	959	982
Orbit and Oculoplasty surgeries	7,648	2,919	169	1,129	2,033	828
Refractive laser procedures	5,353	2,346	0	789	811	1,170
Retinal laser procedures	42,830	14,060	1,229	7,234	9,517	8,044
YAG laser procedures	48,961	16,606	2,704	7,391	10,148	5,483
Intravitreal injections (Anti VEGF and Steroids)	21,406	7,998	479	3,607	4,360	3,777
Other surgeries, Laser procedures and Injections	15,403	5,211	36	1,613	3,968	3,850
Total Surgeries	478,028	171,672	15,785	62,229	101,052	77,795

one of the “gold standard” methods for measuring IOP (in line with slit lamp-mounted Goldmann applanation tonometry) and has now replaced Non-contact applanation tonometry as the initial IOP measurement tool in all Aravind centers.

Cataract surgery in nanophthalmic eyes has a high risk for vision threatening complications. Results of a recent study done by Dr. R. Sharmila of Aravind-Madurai have provided a ray of hope for patients with this condition. The study revealed that performing a simultaneous prophylactic sclerostomy with cataract surgery reduces complication rates, particularly uveal effusions. This study published in the American Journal of Ophthalmology will benefit many patients across the world.

A quality assurance tool is being developed to ensure quality of glaucoma surgeries performed and good outcomes by benchmarking surgeon-wise performance and surgeries.

Patients waiting time is another factor which Aravind is constantly looking to reduce. At Aravind-Madurai, in order to streamline the examination process of review patients, counters have been designated according to the severity of the condition and patients are grouped accordingly. This helps in identifying the high-risk patients who should be taken care of immediately.

With support from Vellore Institute of Technology (VIT), the Glaucoma team at Aravind-Pondicherry developed Periscreener, a smart phone based virtual reality field testing device, which will be validated in collaboration with Johns Hopkins University under the guidance of Dr. David Friedman, Wilmer Eye Institute, USA. It is presumed that after validation, this device will prove beneficial for both in-house and outreach field testing.

CO₂ Laser Assisted Sclerectomy Surgery (CLASS) is being performed on a regular basis.

In collaboration with London Business School and Harvard Business School, Dr. Venkatesh and Dr. Kavitha are pioneering the Shared Medical Appointments Randomized Trial (SMART) to analyse the impact of shared appointments in comparison with traditional one-on-one appointments that are occurring between doctors and glaucoma patients.

Aravind-Pondicherry was chosen to take part in The Asia Primary Tube Versus Trab (TVT) study in collaboration with Prof. Aung Tin, Singapore National Eye Centre.

The department has joined hands with Dr. Gus Gazzard, Moorfields Eye Hospital, London and Dr. David Friedman for the LiGHT India trial, to compare the impact on quality of life of topical anti

Tirupur	Dindigul	Salem	Tuticorin	Udumalpet	CBE CC	Chennai
4,659	4,346	13,205	3,648	6,137	1,383	1,912
40	53	156	60	0	14	24
3	0	442	0	0	0	132
0	0	0	0	0	0	4
1	0	58	0	0	6	0
132	60	479	32	64	24	1
9	7	78	0	1	0	118
12	0	89	0	3	8	3
49	181	141	59	46	47	47
0	0	180	0	0	0	57
0	0	1,802	0	0	107	837
696	1,094	2,243	801	785	323	687
0	0	742	0	0	57	386
47	31	397	39	48	17	146
5,648	5,772	20,012	4,639	7,084	1,986	4,354

glaucoma medication Vs. selective laser trabeculoplasty as the initial treatment for patients with Open Angle Glaucoma and Ocular Hypertension.

Clinics across the centres observed World Glaucoma Week with elaborate programmes to create awareness amongst the public about the disease.

Orbit, Oculoplasty, Ocular Oncology and Ocular Prosthetics Services

In what could be termed as a prime example of a bench to bedside initiative, the Cancer Genetic Testing Centre,

that opened last year, helped develop new protocols and approaches to the treatment of Retinoblastoma (RB). The centre has not only provided the diagnostic support but also aided adult patients in: determining the risk of passing the disease onto their children, and learning about the risk of developing secondary cancers. The genetic testing service is now extended to other centres of Aravind, even in places like Chennai and Jalandhar in Punjab. A major research initiative has been taken this year, with support from Department of Biotechnology, Govt. of India, with the aim of understanding the RB

Aravind-Coimbatore



Retinoblastoma Awareness Week



Aravind-Madurai

tumor development. In RB cases, where the patient's eye has to be removed as a life-saving measure, it falls upon eye care providers to rehabilitate the child by providing them with a prosthesis that properly fits into the patient's eye socket. In the year-ending in March 2018, Aravind's prosthetic centre dispensed 1,213 customised artificial eyes.

Keeping patients' comfort in mind, the department has started performing scarless and sutureless orbitotomy procedures.

Retina Services

With the advent of Artificial Intelligence and Machine learning, Aravind has joined hands with Google to work on an Automated Algorithm for grading Diabetic Retinopathy (DR) with fundus images. Trials are underway to use this algorithm.

Aravind is the first institution in India to make use of Ngenuity, a new device for posterior segment surgeries. This is a 3D visualization system, a platform for Digitally Assisted Vitreoretinal Surgery (DAVS) designed to provide an enhanced visualization of the back of the eye for an improved surgeon experience. This new system allows retina surgeons to operate looking at a high definition 3D screen, instead of bending their necks to look through the eye-piece of a microscope, thereby helping to improve surgeons' posture and reduce fatigue. Furthermore, the system is designed to facilitate collaboration and teaching in the operating room.

Aravind started using Optos, ultra-wide field technology to capture retina images since June 2017. It offers non-mydratic and non- contact imaging through 2mm pupils and many cataracts. It can also capture a

200° view of the retina in a single image in less than 30 seconds. This helps doctors view retina in dilatation resistant pupils, thereby enabling them to make a quick decision.

Aravind-Theni, which used to only provide medical retina services, started providing injection procedures like Avastin, Lucentis, and Tricot in April 2017. By providing this service, patients no longer need to travel to Madurai for these procedures. At Aravind-Madurai, the opening of an exclusive outpatient clinic for free direct walk-in patients will help to enable smooth patient flow.

Paediatric Ophthalmology and Adult Strabismus Services

The department organised several games on the occasion of Children's Day on November 14, 2017. A unique snake and ladder game with eye care awareness as the theme was the highlight of the event. An exhibition was organised to help improve awareness on the importance of eye care for both parents and children.

Segregating the children according to their eye problems has improved patient flow. This also helps in identifying vulnerable and critical cases that need to be attended to immediately.

At Aravind-Coimbatore, Aurochart placed in doctors' cubicles, helps them assess muscle balance more easily and reduce the time taken for evaluation of patients. In infants and preverbal children, teller acuity cards are used for assessing visual acuity.

Under the Rashtriya Bal Swasthya Karyakram scheme, 106 children were examined for eye problems and 22 underwent surgery at Aravind-Madurai.

Optos capturing retina images



Celebrating Children's Day, Aravind-Pondicherry



World Glaucoma Week 2017-2018



Aravind-Chennai



Aravind-Pondicherry



Aravind-Madurai

Aravind-Tirunelveli





Dr. R.D. Ravindran, Chairman, AECS and Dr. Alan Crandall, John A Moran Eye center after signing the MoU

Cataract Services

Endophthalmitis is one of the very serious complications that can happen following cataract surgery. Because of the high risk of vision loss, ophthalmologists around the world find this potential complication a cause of great concern. In an effort to prevent this complication, a study was conducted at Aravind-Madurai, wherein at the end of cataract surgery, the patients received intracameral injection of moxifloxacin. It was found that in these patients, the incidence of post-operative endophthalmitis reduced three and a half to four times as compared to patients who did not have this injection. Followed by the effectiveness of this intervention at Aravind-Madurai, it is now followed in all twelve surgical centers. Another interesting observation was that this drug also helps reduce endophthalmitis in eyes with complications (posterior capsule rent with or

Dr. P. Vijayalakshmi addressing the audience at the launch of VIKAS and Dignify



without vitreous loss) which usually have an eight to ten times higher risk for developing endophthalmitis. With systematic application of the intracameral injection, Aravind is providing better care, thereby increasing patient satisfaction.

A Memorandum of Understanding (MoU) was signed between the Global Outreach Division of the John A. Moran Eye Center (JMEC) and the Aravind Eye Care System (AECS) on December 6, 2017 to partner in training and skills transfer, educational development, basic science and clinical research, patient care practices and protocols and product and material innovation.

Vision Rehabilitation Services

As a novel initiative, the department focused its activities on identifying vision problems in children with special needs and taking the appropriate steps to help them lead an independent life. Around 50 children in special schools were screened for functional vision assessment, following which rehabilitation services were provided; some were also referred to specialists like occupational therapist and speech therapist. On March 27, 2018, the Vision Rehabilitation team in collaboration with Mindtree launched 2 android based software applications, namely VIKAS and Dignify. VIKAS – Visual Intervention Kit with Analytics for children with special needs, is a unique application consisting of multiple exercises, designed to improve and habilitate cognitive vision. Dignify (Digital Nethra for eyes) is a reader software that enables a person with profound Visual Impairment (VI) and legal blindness to read printed material. Both these applications are now available, free of charge, on the Google play store.

The department has also started providing hospital-based vision enhancing activities for children with VI, which has improved their compliance and outcome. As part of the therapy, mirrors have been developed that use lights to help improve the fixation to face and mirror.

As part of mobility training, the team has started to train paediatric patients with VI from two years onwards for orientation and mobility with a height based cane and a traditional walker. This has resulted in improved socialisation, decreased dependence and reduced secondary disabilities in patients.

The centre at Aravind-Madurai was also part of the American Association for Paediatric Ophthalmology and Strabismus webinar in which Dr. P. Vijayalakshmi gave a talk on 'A peek through wandering eyes to a wondrous

brain - Cerebral visual impairment'. This helped in raising awareness regarding the work at Aravind for children with special needs among the professionals attending from around the world.

On-going Service Delivery Projects

SiB-SCOPE Project

With support from Standard Chartered Global Business Solutions Ltd (formerly known as scope), several projects are being implemented in various centres of Aravind.

The departments of Retina and Paediatric Ophthalmology at Aravind-Tirunelveli have taken a new initiative to screen pre-mature babies in Neonatal Intensive Care Units (NICUs) in the Tirunelveli, Kanyakumari, Tuticorin and Virudunagar Districts for ROP using the tele-medicine platform. Trained ophthalmic technicians use RetCam to screen babies at NICUs and the experts at Aravind-Tirunelveli remotely provide a diagnosis using the teleophthalmology platform. This process eliminates the need for these babies to travel to Aravind-Tirunelveli for preliminary examinations and diagnosis. Babies identified with ROP are then referred to Aravind where further investigations are done and treatment is offered at a subsidised rate for the babies at risk. The project was formally inaugurated by Mr. Sandeep Nanduri IAS, District Collector-Tirunelveli on October 6, 2017, and is expected to screen at least 1,500 babies over two years. Over the first six months, the project screened 423 pre-term babies from various hospitals in the selected districts. Of these, 406 babies underwent review

screenings and 21 underwent treatment; eight laser and seventeen injection procedures were done in total.

Another initiative under SiB-SCOPE supports patients of low socioeconomic status that have had painful corneal ulcers by covering travel, costs of medication, and surgery. Enrolment started in April 2017 and 1,305 patients have enrolled. The project also provides equipment support for better diagnosis of corneal ulcers for a timely and appropriate surgical intervention. The project funding is also used to develop an enhanced corneal preservative medium in collaboration with Aurolab.

At Aravind-Pondicherry, SiB-SCOPE supports a project to enhance the quality of outreach with better equipment to enhance case detection and develop an electronic medical record to ensure continuity of care. The project aims to screen 24,000 persons for Diabetes related eye problems and Glaucoma. So far, a total of 47 comprehensive camps have been conducted in which 10,832 people were screened.

QEDJT-PHFI Diabetic Retinopathy Project

Aravind-Tirunelveli is the nodal point for this project supported by the Queen Elizabeth Diamond Jubilee Trust (QEDJT) and Public Health Foundation of India (PHFI). The aim is to develop a district level model for building capacity for effective management of DR in the government health system. The project is implemented in five blocks in the Tirunelveli district that covers 19 Primary Health Centres (PHC). In the year-ending March 2018, the total number of Diabetics that were screened for DR in the PHCs is 4,820. Of these, 427 patients were identified with DR and 139 patients were

Mr. Sandeep Nanduri, District Collector, Tirunelveli inaugurating the ROP project at Aravind-Tirunelveli



Reading and grading centre for DR at Aravind-Tirunelveli





REACH Project: Eye screening of school children

referred to Aravind-Tirunelveli for further investigation and treatment. So far, 45 patients have undergone laser, injection and vitrectomy procedures.

On the capacity building front, two ophthalmologists from Tirunelveli Medical College Hospital (TVMCH) were trained in laser surgery for DR and 2 PMOAs were trained to perform FFA and OCT. Aravind-Tirunelveli conducted a structured 4-day hands-on training session for the four newly appointed NCD staff in July 2017.

Diabetic Retinopathy Reading and Grading Centre was installed at TVMCH which was inaugurated by Dr. M. Kannan MS MCh, Dean, TVMCH on March 28, 2018. A training programme on Aravind Diabetic Retinopathy Evaluation Software was arranged for the medical team of TVMCH.

Vision for All Project

As part of the project implemented by Aravind-Theni, a total of 41 camps were conducted to screen diabetics for DR. A total of 2,938 diabetics were examined and 257 patients were identified with DR, 45 of whom had severe Non-Proliferative Diabetic Retinopathy, Proliferative Diabetic Retinopathy, or Clinically Significant Macular Edema, thus requiring a referral to the base hospital. Around 20 workplace camps were conducted through which 4,071 employees were screened. Of the 1,713 persons who were advised to wear spectacles, 1,587 spectacles were delivered as part of the project. 257 people were referred to the base

hospital for further treatment. As part of the screening school children for refractive errors programme, 14 schools were covered. Of the total 17,010 children screened, 1,942 needed further examination from an expert team, of which 1,059 children were identified to have refractive errors and 803 were advised to wear spectacles (752 of whom were provided with spectacles as part of the project). On the occasion of World Glaucoma Week, Aravind-Theni organised a screening camp for all Glaucoma patients registered in the hospital/Cumbum Community Centre/Vision centres in the past eight years, their family members, as well as the general public. A total of 626 patients were examined at this camp.

Retinopathy of Prematurity Project

Supported by FDC, Limited; Mumbai, Aravind-Theni launched the project on August 26, 2017 to create awareness on Retinopathy of Prematurity (ROP) among rural people by educating them, leveraging information and communication technology. A mobile van, equipped with the necessary equipment, visits various spots where people are likely to gather in large numbers and screen awareness videos or power point presentations on ROP. People can directly interact with the specialists located either at Theni or Madurai to clear their doubts about the disease. In collaboration with six hospitals in and around Theni, Aravind screens babies for ROP

and provides necessary intervention with the support from the project. ROP screening in these hospitals was started on March 10, 2018. Since then, fundus pictures of 98 babies were taken and sent to Aravind-Theni for expert opinion. Of these, 10 were referred to Aravind-Theni for further investigation; eight babies turned up and two, who were found to have ROP, were sent to Aravind-Madurai. The others were advised to have routine follow up examinations.

Orbis-REACH Project

As part of the project titled, Refractive Error Among Children (REACH), trained vision screeners performed preliminary level screening for 153,337 students from 861 schools. A total of 15,675 students were referred for secondary evaluation by an ophthalmologist. Among the referred, 12,995 children were examined by Aravind ophthalmologists. A total of 5,774 children received spectacles and 743 children were referred to Aravind-Madurai for further evaluation. Among those referred, 312 students turned up at the hospital and received treatment. A total of 51 school students underwent surgery.

Eye Care for Tibetan Refugees in India

The three-year project aims to provide eye care for the Tibetan population in Byallakuppe, Hunsur, Kollegal and Mungod in the state of Karnataka. Aravind-Coimbatore implements the project with support from LAICO, the Seva Foundation and the American

Himalayan Foundation (AHF). The team visited the Tibetan settlements at Gurupura - Hunsur and had a series of meetings with the health executives there. In the year-ending March 2018, Aravind-Coimbatore conducted two camps and performed cataract surgery on 68 patients. The project includes providing appropriate treatment / medications, glasses, or surgery, either on-site or at Aravind-Coimbatore, for persons with eye problems.

Allergan-supported DR Project

The project titled Strengthening Diabetic Retinopathy (DR) Screening and Awareness commenced in May 2017 in Madurai. Activities include awareness creation in the community and DR screening camps in diabetes centres and PHCs. A total of 38 DR screening camps were conducted. 3,807 diabetes patients were screened, among which 487 were identified as having DR.

Aravind-Arogya Diabetes Awareness Project

Since India has a high incidence of Diabetes which also causes several eye problems, Aravind joined hands with Arogya World, a non-profit working to prevent non-communicable diseases across the world. The aim is to reach out to 300,000 people over a period of three years, through voice messages and SMS, on how to prevent diabetes. The programme was launched on the occasion of World Diabetes Day on November 14, 2017 at Aravind-Madurai.

At the inauguration of Aravind-Arogya Diabetes awareness project



VISION CENTRES

Eye care providers in developing countries have long struggled with the issue of extending care to all those in need. While patients from rural areas can be reached through eye camps, studies show limited attendance; less than 7% of those in need of eye care in the targeted population attend an eye screening camp.

Through the vision centre concept, the penetration is much higher. Aravind vision centres have been able to reach more than 90% of those who need care within four years. Of these patients, over 90% can be fully treated on-site, and the rest are referred to the base hospital for further treatment, either for surgery or advanced investigations.

Doctors in-charge of the vision centres in Madurai were brought in for a meeting organised at LAICO on December 1, 2017. The meeting reiterated the significance of these centres in achieving universal coverage in eye care and the need for continuous monitoring to ensure quality of care.

Sharing the Model

The success of the vision centre model has attracted several eye care providers and governments. Aravind

provides guidance and support to set up vision centres in their regions. A team of senior government officials from Chhattisgarh visited Aravind in 2015 to learn the vision centre model, and subsequently sent 40 ophthalmic assistants in 2017 to receive customised training in vision centre management. In March 2018, the Aravind team visited Chhattisgarh to help set up two centres - one in Magarlod in the Dhamtari district and another one in Pipariya, the Kawardha district. Both these centres are fully functional now. The state plans to set up 30 more centres by the end of 2018.

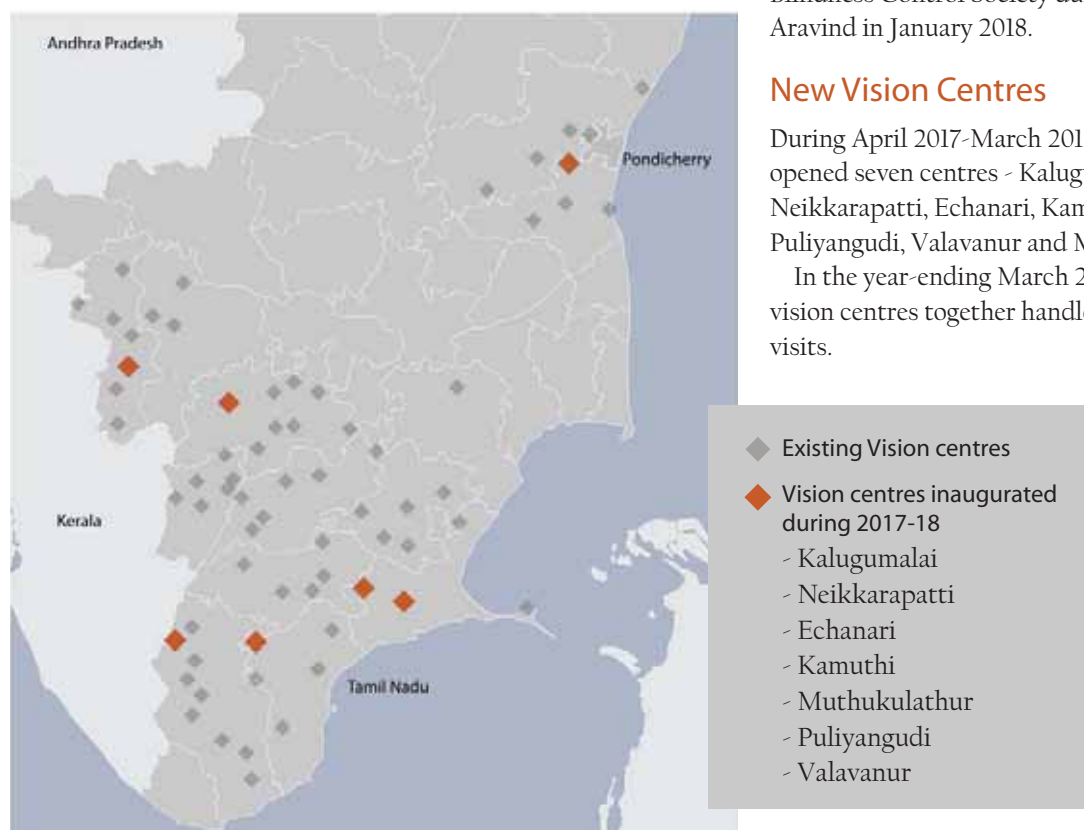
In Bangladesh, Aravind works with the government to help increase the number of vision centres. In line with this goal, a team of ophthalmologists underwent training at Aravind in February 2018 followed by a batch of 10 vision technicians. The Govt. of Bangladesh plans to open 20 vision centres in 2018. As well as helping start new vision centres, Aravind continues providing technical support to the three vision centres that were set up by Bangladesh Rural Advancement Committee in 2016.

Aravind also works with the Govt. of Tamil Nadu to setup vision centres in primary health centres across the state. To this end, discussions were held with Dr. Chandrakumar, Project Director, Tamil Nadu State Blindness Control Society during his visit to Aravind in January 2018.

New Vision Centres

During April 2017-March 2018, Aravind opened seven centres - Kalugumalai, Neikkarapatti, Echanari, Kamuthi, Puliyangudi, Valavanur and Muthukulathur.

In the year-ending March 2018, Aravind vision centres together handled over 586,418 visits.



COMMUNITY OUTREACH

The passing year was a year of several landmark achievements for Aravind's outreach programme. Over 98,000 cataract surgeries were done through camps, the highest, so far by Aravind. Camps in districts such as Perambalur, Tanjore and Trichy received an overwhelming response in terms of admissions for surgery. A mega camp that was held in Thirukailayapuram on March 31, 2018 recorded the highest ever admissions through a single camp. A total of 1,463 people were screened and 1,098 patients were brought in for cataract surgery through the camp. In addition to the significant number on screening that occurred, this camp was special as it was the 25th annual camp conducted by Aravind in a row in Thirukailayapuram. On the staff performance front, several of the camp organisers surpassed their annual target. Aravind-Pondicherry should also be noted for performing 20,011 surgeries through camps, the highest ever since the inception of the hospital.

Aravind conducted 2,779 camps in the community, workplaces and schools, through which it screened 562,853 patients; of these, 94,953 underwent surgery.

New Initiatives

Electronic Medical Record system is being implemented in several comprehensive eye screening camps. This helps in better management and retrieval of data, which in turn helps provide better care for patients. As a new initiative, Aravind-Pondicherry introduced

fundus examination with advanced technology in comprehensive eye screening camps. This will help detect conditions other than Cataract, such as Diabetic Retinopathy and Glaucoma. Those identified with complicated conditions can then be referred to the base hospital for further follow-up. The camp team has started performing ECG for patients advised for cataract surgery who report having systemic problems so that any abnormalities detected can be notified to the operating doctor so that they may take necessary precautions.

Aravind-Madurai has started a new initiative by entering into collaboration with HelpAge India, a leading charity in India working for the disadvantaged elderly to provide them with cataract surgery services in chosen communities.

Aravind-Chennai is also taking up new initiatives, such as conducting free eye camps, which it started doing in February 2018, as well as arranging a training programme for school teachers, on February 15, 2018, to help them identify children with vision problems.

Recognising the Community Partners' Contribution

Community-based service organisations and philanthropists play an important role in Aravind's free eye screening camps. Several of them have been providing unflinching support in the smooth conduct of the camps for several years. Once in two years, Aravind holds a special get-together programme for these sponsors, to acknowledge their contribution

Dr. R.D. Ravindran, Dr. V. Narendran, Mr. R. Meenkashi Sundaram with organisers of the camp at Thirukailayapuram





Aravind team at Kitwe Central Hospital, Zambia

and to receive their feedback and suggestions on how to improve its outreach services. Aravind-Theni and Aravind-Salem each organised a Sponsors' Day on December 3 and 7, 2017 respectively. Around 140 sponsors attended the function at Theni and 45 participated in Salem.

Sharing Aravind's Outreach Model

From August 21 to 24, 2017, Mr. R. Meenakshi Sundaram, Senior Manager, Outreach, AECS visited Seva Cambodia Sight Programme to understand its service delivery system and make necessary recommendations for further improvement.

As part of LAICO's capacity building programme, Mr. R. Meenakshi Sundaram, provided training to the community health workers of the SightSavers-supported vision centres in the Sunderban region. The training programme was held at Netra Niramay Niketan, Chandi from September 20 to 22, 2017.

Mr. R. Meenakshi Sundaram and Mr. S. Kumar, Camp Organiser, went to Kitwe Central Eye Hospital, Zambia to provide job training to the outreach team on October 25 and 26, 2017. They also helped organise a camp which turned out to be a highly successful one.

Mr. R. Meenakshi Sundaram also conducted an onsite workshop for the outreach team

of Sitapur Eye Hospital, from December 20 to 22, 2017.

Outreach Annual Planning Meeting

The meeting occurred at Aravind-Madurai on January 9-10, 2018 analysed the activities of the past year and discussed the way forward to improve outreach services, so as to make it more comprehensive and benefit many more people.

Reaching Out to Create Awareness

Every year, Aravind in association with the International Association of Lions Clubs organises the SightFirst Seminar for the office bearers of Lions Clubs, to orient them on common eye diseases and treatments. The seminar for the office bearers of Lions District 324 - B3 was held on September 24, 2017 at LAICO.

On the occasion of Road Safety Week, the Outreach Department at Aravind conducted exclusive eye screening camps for the drivers of Tamil Nadu State Transport Corporation and private bus companies.

Ln. PMJF. T. Thanikodi, Governor, Lions District 324-B3 honours Dr. S.R. Krishnadas at the SightFirst Seminar



Outreach Performance 2017 - 2018

	Total	Madurai	Theni	Tirunelveli	Coimbatore	Pondicherry	Tirupur	Salem	Tuticorin	Udumalpet	CBE CC	Chennai
SCREENING CAMPS												
Comprehensive Eye Camps												
Camps	1,607	406	112	283	377	294	-	97	30	7	-	1
Patients examined	349,620	103,408	17,053	47,250	89,933	75,360	-	11,242	4,272	802	-	300
Glasses prescribed	76,088	20,647	3,810	11,857	16,539	19,335	-	2,775	853	192	-	80
Glasses delivered	62,691	16,786	3,468	10,373	13,326	15,380	-	2,347	788	149	-	74
Patients operated	52,946	14,340	2,718	9,183	12,282	12,441	-	1,263	571	78	-	70
Diabetic Retinopathy Screening Camps												
Camps	500	66	76	37	260	54	-	6	-	-	-	1
Patients examined	85,349	12,256	3,308	3,214	60,548	5,146	-	627	-	-	-	250
Diabetics screened	33,256	5,755	2,938	1,757	19,368	3,007	-	287	-	-	-	144
DR Patients screened	2,376	778	257	417	560	288	-	53	-	-	-	23
Refraction Camps												
Camps	290	59	20	61	52	63	25	-	-	10	-	-
Patients examined	62,349	15,083	4,071	11,515	12,606	12,412	4,447	-	-	2,215	-	-
Glasses prescribed	21,236	5,375	1,713	4,302	3,798	4,941	790	-	-	317	-	-
Glasses delivered	17,896	4,793	1,587	3,771	3,203	3,781	611	-	-	150	-	-
On the spot deliveries	13,224	3,606	1,041	2,744	2,634	3,009	147	-	-	43	-	-
Refraction Camps by Mobile Unit												
Camps	40	-	-	-	37	-	-	3	-	-	-	-
Patients examined	8,315	-	-	-	7,484	-	-	831	-	-	-	-
Glasses prescribed	606	-	-	-	513	-	-	93	-	-	-	-
Glasses delivered	443	-	-	-	378	-	-	65	-	-	-	-
Eye Screening of School Children-Base Hospital												
Schools served	1,140	861	13	60	21	160	1	-	20	3	-	1
Camps	309	87	13	60	28	103	1	-	13	3	-	1
Teachers trained	3,380	-	100	859	369	1,965	-	-	75	-	-	12
Total children in school	471,309	153,337	15,721	84,998	30,468	164,507	125	-	20,070	1,066	-	1,017
Children screened by oph.	49,131	12,995	1,840	6,193	4,412	21,198	25	-	1,919	435	-	114
Children received glasses	15,572	5,737	710	2,368	1,008	5,226	11	-	427	60	-	25
Children identified with eye defects other than Refractive Error	3,481	743	427	730	362	1,067	1	-	121	15	-	15
Eye Screening of School Children-Vision Centres												
Schools served	7	5	-	-	2	-	-	-	-	-	-	-
Camps	5	3	-	-	2	-	-	-	-	-	-	-
Teachers trained	25	25	-	-	-	-	-	-	-	-	-	-
Total children in school	3,975	3,078	-	-	897	-	-	-	-	-	-	-
Children screened by oph.	1,029	331	-	-	698	-	-	-	-	-	-	-
Children received glasses	87	64	-	-	23	-	-	-	-	-	-	-
Children identified with eye defects other than Refractive Error	36	23	-	-	13	-	-	-	-	-	-	-
Paediatric Eye Screening Camps												
Camps	28	-	6	4	7	11	-	-	-	-	-	-
Children examined	7,060	-	1,644	1,469	1,627	2,320	-	-	-	-	-	-
Refractive errors	411	-	168	223	18	2	-	-	-	-	-	-
Glasses prescribed	6	-	4	-	-	2	-	-	-	-	-	-
Glasses delivered	5	-	3	-	-	2	-	-	-	-	-	-
Other defects identified	480	-	38	14	45	383	-	-	-	-	-	-
VISION CENTRES												
Centres	67	27	7	13	6	9	2	-	-	3	-	-
New + Review	586,418	245,310	66,704	128,958	50,085	68,502	12,493	-	-	14,366	-	-
Out-patients / day	30	31	31	34	29	27	20	-	-	16	-	-
COMMUNITY EYE CLINICS AND CITY CENTRES												
Centres	6	3	1	1	-	1	-	-	-	-	-	-
New + Review	196,446	109,169	23,177	32,046	-	32,054	-	-	-	-	-	-
Outpatients / day	106	117	75	103	-	103	-	-	-	-	-	-

ARAVIND INTEGRATED EYE BANK SERVICES (AIEBS)

AIEBS collect tissues by closely involving the community and also in collaboration with various hospitals. 76% of the tissues collected at Aravind eye banks is through the Community Cornea Retrieval Programme, which involves trained doctors, volunteers and NGOs (such as Lions Clubs). Under the Hospital Cornea Retrieval Programme (HCRP), the eye banks collaborated with seven Government Medical College Hospitals and five private hospitals. 24% of tissues collected is through HCRP. Upon request, AIEBS distributes quality cornea, sclera and amniotic membrane to hospitals across India.

Rotary Aravind International Eye Bank (RAIEB), Madurai received quality accreditation from SightLife, USA for maintaining quality in the eye banking process. RAIEB has been collaborating with primary health centres in Madurai to increase the number of eye donations. Upon receiving a death notification from the community, these centres inform RAIEB to help with the eye donation process. In order to facilitate a smooth eye donation process, RAIEB started training the staff of these centres in eye banking and eye collection techniques, in association with Deputy Director of Health Services, Government of Tamil Nadu. Two training programmes were organised so far and RAIEB aims to conduct 12 more this year.

A total of 53 pairs of eyes were received from a donor hospital in Madurai in February 2018, the highest ever collection from a hospital in a single month. Two eye donation counsellors at Madurai collected 25 pairs of eyes in February 2018, the highest ever collection by an eye donation counsellor in one month.

Eye donation centre at Kumbakonam successfully completed three years of service in promoting eye donations. The centre has been doing many awareness creation activities on eye donation, channelising death



Ms. K. Anusya and Ms. P. Palaniammal at the Sight Ready Asia 2017 conference, New Delhi

notifications and retrieving quality corneas. The centre collected 924 tissues during 2017-2018.

Other initiatives have occurred in increasing awareness on the importance of eye donation. National Eye Donation Fortnight, which took place from August 25 to September 8, turned out to be an excellent platform to sensitise the public about eye donations and to seek their support in this noble cause. Programmes during the fortnight included awareness lectures, rallies, distribution of awareness pamphlets, and felicitating donor families and voluntary organisations. Social media also helped to promote the concept of eye donations.

Aravind itself has also achieved many things with regards to its eye bank. IOB-Aravind Eye Bank, Coimbatore received the Best Service Award from Illanjchirpi Trust on January 26, 2018. RAIEB, Madurai trained five eye bank technicians, an eye donation counsellor and a coordinator. Ms. K. Anusya, Eye Bank Technician and Ms. P. Palaniammal, Eye Donation Counsellor, RAIEB successfully completed the Certificate Course for Eye Bank Technicians and Counsellors organised by Eye Bank Association of India and SightLife during the Sight Ready Asia 2017 conference held at New Delhi on October 7, 2017.

Statistics 2017 - 2018

Centre	Eyes collected	Eyes utilised
Madurai	2,469	1,148
Coimbatore	1,570	701
Pondicherry	1,136	403
Tirunelveli	711	260
Total	5,886	2,512

Eye banks across the Aravind centres collected 5,886 eyes in the year-ending March 2018. Of these, 2,512 eyes were utilised for surgery.

Eye Donation Fortnight 2017 - 2018



Aravind-Pondicherry



Aravind-Dindigul



Aravind-Tirunelveli



Aravind-Theni

Aravind-Madurai

Lawyers of Madurai Highcourt handing over the eye donation pledge card to Dr. N. Venkatesh Prajna





Dr. G. Venkataswamy with the Aravind ophthalmologists and ophthalmic assistants from Nepal in the early '80s

The concept of sharing is deeply etched in the ethos of Aravind – be it knowledge, technique or systems. This has translated into various training programmes offered throughout the year, for different cadres of eye care personnel. Apart from the various structured courses, Aravind offers customised training programmes on request in allied areas such as patient counselling, medical record management etc.

CMEs ORGANISED AT ARAVIND

Continuing Medical Education (CME) programmes and workshops are regularly organised to facilitate a platform for rich sharing of knowledge.

AGES 25 (Aravind Glaucoma Education Services)

Aravind-Pondicherry, October 13-15, 2017

The glaucoma CME was organised to mark the Silver jubilee celebration of the initiation of glaucoma training at Aravind and Dr. V's birth centenary. Gonioscopy Assisted Transluminal Trabeculectomy (GATT) live surgery was performed during the programme, the first-of-its-kind initiative in India. Scientific sessions covered not only the basics and current trends but also the future of glaucoma care. Faculty included

eminent persons from USA, Canada, and India.

A total of 240 delegates from all over the country attended. A get-together was exclusively organised for Aravind Glaucoma Alumni which was attended by 35 ophthalmologists trained from various branches of Aravind. A wet lab session on Aurolab Aqueous Drainage Implant (AADI) and GATT were arranged exclusively for the alumni.

Glaucoma Training Workshop for District Ophthalmologists

Aravind-Madurai, November 2-3, 2017

National Programme for Control of Blindness and Visual Impairment (NPCB & VI), Ministry of Health & Family Welfare, Govt of India, arranged a series of workshops for district ophthalmologists in early diagnosis and treatment of Glaucoma. Aravind Eye Hospital, Madurai was chosen as one of the training centres. The first training programme was held in November 2017. A total of 47 ophthalmologists identified and nominated by the NPCB attended the training programme in seven batches by the year-ending March 2018. In addition to several lectures and hands-on training, the participants were briefed on the use of a mobile application, to detect and enter diagnosis and treatment of glaucoma, in their locality.

Aravind team with guest faculty at AGES 25



Education and Training



*Dr. Mark Duffy
at the OPAI
conference*

*Dr. G. Natchiar and Dr. Usha Kim, at the
inauguration of OPAI*

XXVIII Annual Conference of Oculoplastic Association of India (OPAI)

Aravind-Madurai, October 27-29, 2017

The conference served as a potpourri of basics, current topics and advances as well as included relevant sub specialities like pathology, radiology, plastic surgery, oncology, ENT, maxillofacial surgery and neuro surgery. Scientific sessions consisting of case reports, video assisted skill transfer, live surgeries, workshops, case discussions and presentations provided rich learning experience for the participants. Debates, keynote lectures, photography competition and quiz evoked great response. Around 290 participants attended the conference.

Cornea Connect

Aravind-Madurai, September 15-17, 2017

The CME discussed the management of frequently encountered corneal disorders, lamellar corneal surgery and also had debates on controversial topics. Apart from Aravind team, faculty included doctors Proctor Foundation, San Francisco, USA; University of Maryland School of Medicine, Baltimore, USA; University of Illinois Eye and Ear Infirmary, Chicago, USA; The Jules Stein Eye Institute, Los Angeles, USA; Kellogg Eye Center, University of Michigan, USA; Royal Derby Hospital, NHS Trust, UK; Ayrshire Eye Clinic and Laser Centre, Scotland, UK; Institute of Ageing and Chronic Disease, University of Liverpool,

*Dr. M. Srinivasan interacting
with the participants at
Cornea Connect*

*Dr. Prajna, Organising Secretary of
Cornea Connect*



UK; Moorfields Eye institute, UK and Dr. R.P. Centre for Ophthalmic Sciences, New Delhi. Around 150 participants attended the CME.

Update on Ophthalmic Diagnostics

Aravind-Tirunelveli, November 25-26, 2017

The main purpose of the CME was to familiarise the participants with the revolutionary changes in the field of ophthalmic diagnostics. Eminent Faculty with rich knowledge and experience were invited to discuss the recent advances and developments at length. Close to 130 participants participated.



Inauguration of the CME - Update on Ophthalmic Diagnostics

All India Ophthalmic Conference 2018

Coimbatore, February 22-25

Organised by All India Ophthalmological Society (AIOS), the grand event was held under the aegis of Tamil Nadu Ophthalmic Association & Coimbatore Society of Ophthalmic Surgeons at CODISSIA trade fair complex. Aravind-Coimbatore played a seminal role in ensuring the smooth conduct of the conference with Dr. V. Narendran and Dr. Rodney John Morris as the Organising Secretary and Joint Organising Secretary respectively. Mr. Subroto Bagchi, Chairman, Odisha Skill Development Authority was the chief guest. As many as 6,000 ophthalmologists from various parts of

the country and across the globe participated and there were over 1,500 trade delegates. Apart from several scientific sessions, the conference had various technical skill transfer courses, instruction courses, symposia and scientific paper/poster sessions.

Recent Advances in Ophthalmology

Aravind-Tirunelveli, April 16, 2017

The CME was organised to provide an update on the latest technologies to diagnose and treat various eye disorders. Around 40 persons from various hospitals

All India Ophthalmic Conference organised by Aravind-Coimbatore





Participants of the Skill Transfer Course in Penetrating Keratoplasty

that included medical officers, postgraduate students, fellows and senior paramedical staff participated.

Skill Transfer Course in Penetrating Keratoplasty

Aravind-Madurai, June 14-17, 2017

Cornea Services at Aravind-Madurai organised the course in partnership with SightLife. Six participants received this hands-on training.

2nd World Conference on MSICS-Comprehensive Cataract Conference 2017 (CCC 2017)

Aravind-Chennai, December 1-3, 2017

Aravind Eye Care System partnered with International Society of Manual Small Incision Cataract Surgeons

(ISMSICS) to host the conference. Pre-conference workshop was held at Aravind-Chennai on December 1 and the scientific sessions were held at ITC Grand Chola. The pre-conference session saw participation of 275 ophthalmologists from across the world. Free paper and video sessions were also conducted. Live surgeries were performed by ten experienced faculty using different surgical techniques. There were nine wetlab stations for SICS, phacoemulsification, anterior vitrectomy and intravitreal injections. Around 80 doctors received hands-on training.

7th Biennial Symposium on Diabetic Retinopathy

Aravind-Madurai, January 6-7, 2018

Aravind-Madurai in collaboration with Sankara Nethralaya, Chennai; L.V. Prasad Eye Institute, Hyderabad; Narayana Nethralaya, Bengaluru and Joslin Diabetes Centre, USA organised the symposium. Apart from faculty of these institutes, guest faculty



7th Biennial Symposium on Diabetic Retinopathy





Hands on training at the Workshop on Instruments Care and Maintenance

included Dr. Ingrid Zimmer Galler, Dr. Paolo Antonio S Silva, Dr. Peter Louis Gehlbach - from USA, Dr. Rupesh Agrawal from Singapore; Dr. Sobha Sivaprasad and Dr. Usha Chakravarthy from UK; Dr. Dharendra S. Katti, Dr. Atul Kumar, Dr. Mahesh Shanmugam P, Dr. Vasumathy, Dr. Kasinathan and Dr. Koshal Ram from India. Scientific programme was well organised with lectures on DR, debates, challenging case discussions and interactive sessions. A total of 209 delegates participated.

Sixth Workshop on Instruments Care and Maintenance

Aravind-Salem, July 5, 2017

Organised for the sixth year in row by Aravind-Salem, the workshop had 21 participants consisting of biomedical engineers, instrument technicians, optometrists / optometry students, ophthalmic



Dr. Madhu Shekhar handling session at the workshop on Basics of Phacoemulsification

assistants from Salem, Namakkal and Dharmapuri districts.

Workshop on Basics of Phacoemulsification

Aravind-Madurai, November 4-5, 2017

In this workshop organised jointly with Alcon, there were lectures, interactive sessions and a hands-on wetlab session where each doctor was required to perform all steps of phaco including wound construction, CCC, hydro procedures and nucleus management.

ReLOAD Phacoemulsification Workshop

Aravind-Tirunelveli, March 24-25, 2018

The workshop conducted in association with Alcon was attended by 20 medical officers from various Aravind centres. An introduction regarding the wetlab practice of Anterior vitrectomy, Capsular Tension Ring (CTR) implantation and use of iris hooks was given.

Participants of ReLOAD Phacoemulsification Workshop



Candidates Trained 2017-18

Total Candidates: 597

POSTGRADUATE COURSES

Diploma in Ophthalmology (2 years)	8
Master of Surgery in Ophthalmology (3 years)	11
Diplomate of the National Board (3 years)	19
Post DO DNB (2 years)	13

LONG-TERM OPHTHALMOLOGY FELLOWSHIP

Ant. Segment / Intraocular Lens Microsurgery (2 years)	14
Orbit & Oculoplasty (18 Months)	7
Paediatric Ophthalmology & Strabismus (18 months)	17
Glaucoma (2 years)	14
Retina Vitreous (2 years)	22
Cornea (18 Months)	18
Comprehensive Ophthalmology (2 years)	1
Fellowship in General Ophthalmology	27

SHORT-TERM FELLOWSHIP (FOR INTERNATIONAL CANDIDATES)

Orbit & Oculoplasty (6 Months)	1
Orbit & Oculoplasty (1 year)	1
Cornea (1 year)	2
Glaucoma (1 year)	2
Paediatric Ophthalmology (1 year)	2
Retina (1 year)	3

SHORT-TERM CLINICAL COURSES FOR OPHTHALMOLOGISTS

Small Incision Cataract Surgery (1 Month)	31
Clinical Observership Programme in Diagnosis and Management of Glaucoma (1 Month)	21
Lasers in Diabetic Retinopathy Management (2 Months)	47
Vitrectomy (Virtual) (2 weeks)	1

Management of Retinopathy of Prematurity & Paedia. Retinal Disorders (1 Month)	14
Neuro-Ophthalmology (3 months)	4
Phacoemulsification (1 month)	35

SHORT-TERM PARAMEDICAL COURSES

Optical Dispensing (3 Months)	4
OT Techniques (2 Months)	4
Refraction Techniques (2 Months)	8
Orthoptist (6 Months)	3
Ocularist (3 weeks)	7
Fundus Fluorescein Angiography and Ultrasonography (2 Months)	7
Vision technicians (2 months)	2

MANAGEMENT COURSES

Management Priorities in Eye Care Delivery (1 week)	21
Management Training and Systems Development for Hospital Administrators / Managers (4 weeks)	28
Project Management training for Eye Care (4 weeks)	10
Eyexcel - Expanding Global Eye Care Workforce through Excellence in Training (4 Days)	32
Research Methodology (5 Days)	50
Medical Records Management (2 weeks)	10
Management Training for Eye Care Programme Managers (2 weeks)	22
Community Outreach and Social Marketing of Eye Care Services (3 weeks)	15
Instrument Maintenance - for Technicians (4 weeks)	31
Instrument Maintenance - for Ophthalmologists (5 days)	3
Training in Eye Bank Techniques (1 month)	5



INTERNAL CAPACITY BUILDING

Keeping abreast of the latest developments in the field is essential to ensuring high quality care and successful treatment. Every year, Aravind sends its doctors to prestigious eye care institutions mostly in the US and Canada to update themselves on the various new treatment modalities and technological advancements in eye care delivery as well as to observe under stalwarts in respective specialities.



Dr. Shivananda N, Consultant, Cornea Services, Aravind-Pondicherry with Dr. Aldave and team at University of California, Los Angeles



Dr. A. Syed Mohideen Abdul Khadar, Consultant, Retina and Vitreous Services, Aravind-Tirunelveli with Dr. Besirli at Kellogg Eye Center, University of Michigan



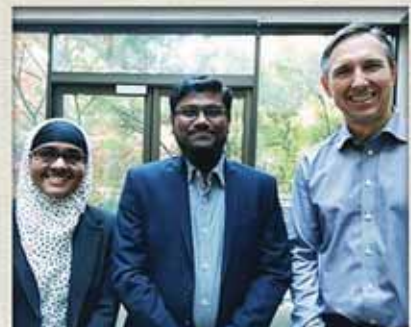
Dr. George J Manayath, Consultant, Retina Vitreous Services, Aravind-Coimbatore with Dr. Bailey Freund and the Retina Team at Vitreo Retina and Macula Consultants, NewYork



Dr. Manas Nath, Consultant, Cataract and IOL Services, Aravind-Pondicherry with Dr. David Chang at Stanford University



Dr. T. Radhika, Consultant, Uvea Services, Aravind-Madurai at Wilmer Eye Institute, Baltimore



Dr. Sherin Haroon, Consultant, Cataract and IOL Services, Aravind-Tirunelveli, Dr. Syed Mohideen Abdul Khadar and Dr. Maeberley at Eye Care Centre, Vancouver General Hospital, Canada

CONFERENCES ATTENDED ELSEWHERE

Various national and international conferences attended by Aravind staff during April 2017-March 2018 are listed below.

Training of Trainers for Ophthalmic Assistants in Nepal

Kathmandu, Nepal, April 4-10, 2017

A. Arumugaselvi, Co-ordinator, Cataract and IOL Services, Aravind-Madurai was the guest faculty for the programme sponsored by Seva - Nepal. Participants from eight eye hospitals in Nepal attended. She handled the following topics:

- AECS: An overview and MLOP programme
- Journey from classroom to work station
- Evaluation of the training programme: Why, when and how?

Annual Meeting of the Saudi Ophthalmological Society

Riyadh, Saudi Arabia, April 15-17

R.D. THULASIRAJ

- Building a multi-speciality academic patient centered practice
- Scaling quality - ensuring better outcomes
- The Aravind model - bridging the community to the hospital

Annual Conference of American Society of Cataract and Refractive Surgeons (ASCRS)

Los Angeles, USA, May 5-9, 2017

DR. R. VENKATESH

- Manual Small Incision Cataract Surgery

DR. K. VEENA

- Screening one million children for visual impairment and blindness: A community based model
- A comparative study on retroiridal iris claw lens versus sutureless scleral fixated intraocular lens in the absence of capsular support

DR. PRASANTH GIREESH

- Multifactorial long-term retrospective analyses of traumatic cataract in a tertiary eye care hospital (Poster: Dr. Prasanth Gireesh, Dr. Prabu Baskaran)

Ms. A. Arumugaselvi with the faculty and participants of Training of Trainers for Ophthalmic Assistants in Nepal



Dr. Veena, Dr. R. Venkatesh and Dr. Prasanth Gireesh at the ASCRS Conference, Los Angeles

DR. PRABHU

- Prospective, case control, observational study of aberration in myopic astigmatism with and without keratoconus
- Post C3R -A rare case of acanthamoeba infection

DR. PRASANTH & DR. PRABHU

- Extraocular needle guided
- Haptic insertion
- Technique for scleral fixation IOL

Annual Conference of Association for Research in Vision and Ophthalmology (ARVO) 2017

Baltimore, USA, May 7-11, 2017

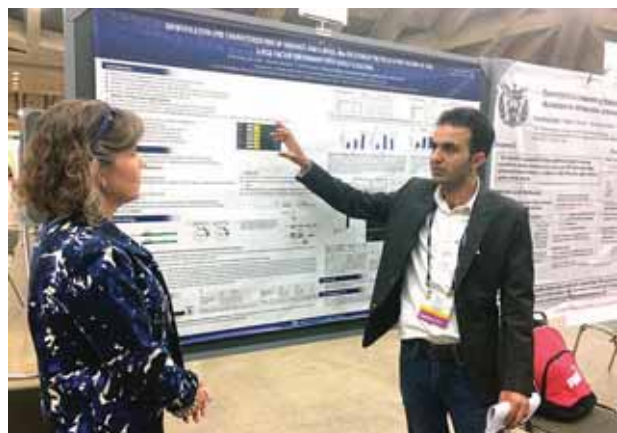
MOHD HUSSAIN SHAH

- Identification and characterisation of variants and a novel 4bp deletion in the regulatory region of SLX6, a risk factor for Primary Open Angle Glaucoma.

DR. S. KAVITHA

- Safety and efficacy of 0.1% Nepafenac versus 1% Prednisolone Acetate eye drops after laser iridotomy-Prospective randomised trial
- Shared medical appointments in Glaucoma management at a tertiary eye hospital-A randomised trial

Mr. Mohd Hussain Shah presenting poster at ARVO 2017, Baltimore



National Workshop on Clinical and Diagnostic Aspects of Fungal Infections

Pondicherry, May 11-12, 2017

DR. JOSEPH GUBERT

- Clinical and diagnostic aspects of fungal infections (Best Poster Award)

Annual Conference of Asia-Pacific Association of Cataract and Refractive Surgeons (APACRS)

Hangzhou, China; May 30-June 03, 2017

DR. ANNAMALAI

- The Oscar dream : Low cost, high-definition surgical video recorder
- A retrospective study on the outcome of air descemetopexy in post-cataract surgery Descemet's membrane detachment

DR. BHARAT, DR. MANAS NATH

- Clinical profile and retrospective multifactorial analysis of factors influencing visual outcome in traumatic cataract in a tertiary eye care hospital

Annual Meeting of International Society for Stem Cell Research (ISSCR) - 2017

Boston, USA, June 14-17

K. LAVANYA

- MicroRNA profiling of enriched human corneal epithelial stem cells

S.YOGAPRIYA

- Identification and quantification of human trabecular meshwork stem cells

Annual Conference of Vision 2020: The Right to Sight – India

Raipur, Chattisgarh, June 3-4, 2017

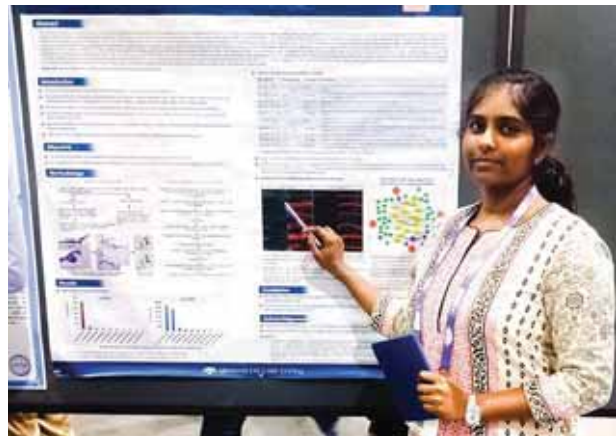
DR. R.D. RAVINDRAN

- Introduction to quality in healthcare
- High volume quality eye care: Operating high volume cataract surgery-pitfalls & preventions
- Cat QA

R. D. THULASIRAJ

- Quality benchmarking : Working together to drive quality
- Scope of improving HMIS for cataract surgeries

LAICO team at the Annual Conference of Vision 2020, Raipur



Ms. K. Lavanya presenting poster at Annual Meeting of ISSCR

MOHAMMED GOWTH

- Leveraging technology to ensure coverage
- IT solutions for outreach

DHIVYA RAMASAMY

- Quality indicators for efficiency & patient centered care

SANIL JOSEPH

- Prevalence and risk factors for Myopia and Hyperopia in an adult population in southern India
- A comparison of post-operative outcomes among patients undergoing day-care Vs. in-patient surgery for cataract in south India

A. SYED ALI

- Impact of capacity building and awareness creation of providers, in enhancing uptake of services for Retinopathy of Prematurity

S. SANGEETHA

- Field workers and key informant strategy in identifying children with low vision

VIGNESH

- Boon of appointment systems in eye care hospitals

N. VENGADESAN

- Opportunistic screening for posterior segment eye problems: A comparison of conventional outreach camps to novel outreach camps





Dr. R. Ramakrishnan, Dr. Devendra Maheswari, Dr. Sathyan and Dr. Sharmila at the World Glaucoma Congress, Finland

7th World Glaucoma Congress – 2017

Helsinki, Finland, June 28 - July 1, 2017

DR. RAMAKRISHNAN

- Glaucoma care in resource poor settings
- Alternative and complementary therapies for glaucoma

DR. DEVENDRA MAHESWARI

- A short term analysis of anterior chamber and pars plana insertion of AADI implant
- To compare the efficacy and safety of injectable versus sponge soaked MMC in patients undergoing trabeculectomy
- Safety and efficacy of Mitomycin-C applied by subconjunctival injection versus sponge method in Phacotrabeculectomy

DR. MANJU PILLAI

- Long term surgical outcome of primary congenital glaucoma in south Indian population

DR. SHARMILA

- An analysis on severity of newly diagnosed primary open angle glaucoma patients presenting to a tertiary eye care centre in south India

Asia Pacific Tele-Ophthalmology Society Conference

Hongkong, July 15-17, 2017

R.D. THULASIRAJ

- Teleophthalmology in India.

Participants of the Annual conference of IERG



Indian Intraocular Implant & Refractive Surgery Convention

Chennai, July 8-9, 2017

DR. R. VENKATESH, DR. JOHN DAVIS AKKARA

- The Oscar dream : Low cost, high definition surgical video recorder (Best Video Award)

DR. R. VENKATESH

- Surgical options for managing angle closure disease
- Co-chairman for the session on Ophthalmic surgery
- Manual small incision cataract surgery: why MSICS in the era of flacs

Ophthafusion

Coimbatore, July 15-16, 2017

DR. USHA KIM

- Thyroid eye disease clinical spectrum and medical management
- Ptosis correction
- Orbital fractures - Update on management

Annual Conference of Indian Eye Research Group (IERG)

Madurai, July 29-30, 2017

Oral presentations

DR. USHA KIM

- Why research in clinical practice?

S. ASHWIN BALAJI

- Effect of cyclic IOP in outflow facility and activation of Rho A / Rock signal cascade in human eyes

DR. C. SATHYA PRIYA

- Whole genome assembly and annotation of *Aspergillus flavus* clinical isolates

Poster presentations

SANIL JOSEPH

- Effectiveness of telemedicine in identifying diabetic retinopathy cases compared with universal referral-a cluster randomised trial

LAVANYA K

- Identification of corneal epithelial stem cell specific Micro RNAs

DR. O.G. RAMPRASAD

- Novel chemical cross-linking of the cornea for the treatment of Keratoconus

MOHAMMED RAZEETH

- Fungal infection induce peripheral alternative pathway of complement system

KATHIRVEL K

- Analysis of mutations in the MexAB-OprM efflux pump regulatory genes in ocular *Pseudomonas aeruginosa* isolates from keratitis patients

PRAKADEESWARI GOPALAKRISHNAN

- MTHFR and MTHFD1 gene polymorphisms are not associated with Psudoxfoliation syndrome in south Indian population

NITHYA LAKSHMI SAMPATH

- Quantitative determination of total Zag protein level in Keratitis patient tear

SANGEETHA RAMALINGAM

- Characterisation of drug resistance and tolerance mechanisms in corneal isolates of *Pseudomonas aeruginosa* obtained from keratitis patients

SANDHYA KRISHNAN

- Activation of alternative complement pathway in Mycotic Keratitis

DURGA MURUGAN

- Spectrum of mutations in the Carbohydrate Sulfotransferase 6 (CHST6) gene causing Macular Corneal Dystrophy (MCD) in Indian families

V. LAKSHMI PRABHA

- Identification and characterisation of *Aspergillus flavus* exoproteome in early stages of propagation

YOGAPRIYA S

- Identification and quantification of human trabecular meshwork stem cells

ROOPAM DUVESH

- Evaluating the genetic association of candidate genes loci with primary angle closure glaucoma in south Indian population

MANOJKUMAR K

- Automated exome analysis pipeline using next generation sequencing data for eye diseases

MOHD HUSSAIN SHAH

- Identification and characterisation of variants and a novel 4 bp deletion in the regulatory region, a risk factor for primary open angle glaucoma

KUMARAGURUPARI

- Worldwide research productivity in paediatric eye health: A bibliometric analysis

K. THIRUMALAI RAJ

- Identification of Germline RBI mutations and risk prediction in Retinoblastoma patients

VIGNESH P

- Comparison of C3 protein expression level in various diabetic retinopathy serum samples

MOHAMMED GOWTH

- Role of telemedicine enabled rural vision centres in enhancing eye care coverage - a retrospective study in a south Indian district

RANJANI SINGARAJ

- Analysis of serum micro RNA profiles from diabetic retinopathy patients

S. UMADEVI

- A systematic bioinformatic approach to screen potential drug target in ocular pathogen chlamydia trachomatis

A. ALOYSIUS ABRAHAM

- Role of duplications in tumor suppressor gene, RBI in Retinoblastoma

DR. BALAMURUGAN

- Analysis of polymerase chain reaction results with clinical diagnosis of ocular tuberculosis in a tertiary eye care centre in south India

DR. PIYUSH KOHLI

- Emerging antibiotic resistance among staphylococcus epidermidis in patients using antibiotics after intravitreal injections in pro-re-nata (prn) dose

T. SHANTHINI

- Detection of Loss of Heterozygosity (LOH) using next generation sequencing in retinoblastoma cases

DR. SANTHI. R

- Relevance of unexplained peripheral eosinophilia and retinoblastoma in a tertiary eye care centre, new paradigm on peripheral blood eosinophilia and embryonal malignancy

GANESH-BABU BALU SUBBURAMAN

- Eye Infobase: An innovative approach in building global repository of blindness and morbidity data by Lions Aravind Institute of Community Ophthalmology (LAICO), India

Mr. R.D. Thulasiraj and Dr. R. Venkatesh at China Eye Health Conference, Taiyuan



GOVINDARAJAN. R

- Ophthalmologists' preferences on information characteristics - An opinion survey

First China Eye Health Conference

Taiyuan, China, August 23-29, 2017

R.D. Thulasiraj, Dr. R. Venkatesh and R.D. Sriram participated in the conference to develop eye health plan for China.

Fourth World Congress of Retinopathy of Prematurity

Cancun, Mexico, August 31-September 02, 2017

DR. PARAG SHAH

- Surgery: Stage IV and V ROP
- No contraction of flat Fibrovascular membrane following intravitreal injections of Bevacizumab in advanced Retinopathy of Prematurity

IAPB Council of Members Meeting

Kathmandu, Nepal, September 18, 2017

R.D. Thulasiraj participated in the meeting and shared inputs as a panelist in the discussion on *Meta analysis on eye health data. Why and How?*

R. Meenakshi Sundaram also attended the meeting.

Annual Conference of Eye Bank Association of India

Patna, September 9-10, 2017

DR. ASHISH KUMAR

- Management of Bacterial Keratitis (Instruction course)

Annual Conference of Glaucoma Society of India - Glaukopedia 2017

Jaipur, September 15-17, 2017

DR. R. VENKATESH

- Non penetrating glaucoma surgery and CO₂ laser assisted sclerotomy
- Sequential versus combined cataract and glaucoma surgery: Pros and cons
- Periscreener - Smartphone based virtual reality device for Perimetry (Best video award)

Dr. Mohideen Abdul Kader, Dr. Alan Robin, Dr. Ramakrishnan and Dr. Devendra Maheshwari at Glaukopedia



DR. S. KAVITHA

- Indian scenario: are shared medical appointments necessary?
- Safety and efficacy of 0.1% Nepafenac versus 1% Prednisolone acetate eye drops after laser iridotomy - A prospective randomised trial

DR. SWATI UPADHYAYA

- Assessing the sensitivity and specificity of non-mydiatic fundus camera for glaucoma screening

DR. P. SUNDARESAN

- Current trends in POAG and PACG genetics

DR. RAMAKRISHNAN

- Exercising surgical options in glaucoma
- Chaired the session on Optic Disc
- Chaired the debate on step by step approach to seeing the optic disc and RNFL Layer

DR. MOHIDEEN ABDUL KADER

- Come read with me ONH evaluation
- AADI only (Debate)

DR. DEVENDRA MAHESHWARI

- Diode Laser cyclophotocoagulation - Way to do

DR. GANESH V RAMAN

- Tonometer cost implication of newer tonometer
- Post trab shallow A/C management

DR. REJI

- Our experience with AADI
- Short term outcome of AADI
- Spherophakia (Photo essay)

DR. VARSHA

- Comparison of polyglactin and nylon Vs. nylon suture for scleral flap suture in phacotrabeculectomy

DR. SAMEERA

- Outcome of diode laser cyclophotocoagulation with anterior chamber paracentesis in refractory glaucoma

Annual Conference of European Society of Cataract and Refractive Surgeons (ESCRS)

Lisbon, Portugal; October 07-11, 2017

DR. ANITHA RAGHAVAN

- Is acanthamoeba the ultimate opportunist?

Mr. R.D. Thulasiraj - IAPB Council of members meeting





Dr. S.R. Rathinam with Dr. Bahram Bodaghi, President, International Ocular Inflammation Society at Lausanne, Switzerland



Dr. P. Sundaresan with the delegates at World Congress on Genetics, Genomics and Personalised Medicine, Bengaluru

DR. ARJUN

- Piggy back surgery in Nanophthalmos

DR. KALPANA NARENDRA

- What's new in pediatric cataract?
- Torics and multifocals in children

DR. SANDRA GANESH

- Sutureless, glueless, flapless scleral fixation IOLs children

DR. CHRISTY

- Bimanual nucleus prolapse technique

DR. FREDRICK

- Efficacy of intra cameral Moxifloxacin in preventing post-operative endophthalmitis

International Ocular Inflammation Society Meeting

Lausanne, Switzerland; October 18, 2017

DR. S.R. RATHINAM

- Quality-of-life outcomes from a randomised clinical trial comparing antimetabolites for intermediate, posterior and panuveitis
 - Paradoxical hypersensitivity reactions in ocular leprosy
- She also co-chaired the scientific committee.

Annual Conference of Oculoplastic Association of India

Madurai, October 27-29, 2017

DR. SHUBHA RAGURAM

- Ocular and orbital prosthesis

DR. USHA KIM

- Genetics of Retinoblastoma

DR. VAIBHAVI TRIVEDI

- Can malignancy be like this? Guess what?
- Case series of lacrimal gland lymphoma - clinical management and features

DR. SAPAN SHAH

- Acute Hypo kalemia periodic paralysis after intravenous administration of Methyl Prednisolone in patient with graves ophthalmopathy
- A case series of orbital Rhabdomyosarcoma (Best Free Paper award)

DR. GAYATHRI FULSE

- Spectrum of orbital diseases in paediatric age group

DR. MEGHNA TANWAR

- Clinico-social profile of patients undergoing treatment with Botulinum toxin - A for facial dystonias at a tertiary eye care facility in south India

DR. MANEKSHA

- Proptosis work up
- Enucleation with implant

DR. ANJU SURESH

- Lid reconstruction

DR. VIJI RANGARAJAN

- Evaluation of ptosis
- Cicatricial ectropion-scar revision with FTSG

DR. YAZHINI

- Tricky rodent
- Yet another masquerade of RPE Adenocarcinoma

Annual Conference of Uveitis Society of India

Kolkatta, November 11, 2017

DR. VEDHANAYAGI

- Newer biologicals in refractory cases

DR. S. BALAMURUGAN

- Intermediate uveitis, Quiz in uveitis : Revisiting the basics

World Congress on Genetics, Genomics and Personalised Medicine

Bengaluru, November 15-16 2017

DR. P. SUNDARESAN

- Molecular and prenatal diagnosis for some of the inherited eye diseases and gene discoveries

Second International Conference on Founder Populations

Kochi, November 09-12, 2017

DR. P. SUNDARESAN

- Gene discoveries for some of the inherited eye diseases

Annual Conference of Vitreo Retinal Society of India

Bhubaneswar, November 29, 2017

DR. JAYANTH KUMAR

- Surgical management of macular fold following retinal detachment surgery

DR. AMIT

- Pars plana insertion of aurolab aqueous drainage implant (AADI) tube in cases with refractory glaucoma - a retrospective analysis

DR. PIYUSH KOLI

- Effect of prophylactic laser of peripheral breaks in preventing RRD in patients with FEVR, Comparative study of Inverted internal Limiting Membrane (ILM) flap Vs. conventional standard technique in large macular holes

DR. PRERANA SHAH

- Raising the barrier for 25 G lens sparing vitrectomy for infants with retinopathy of prematurity

DR. CHITARANJAN MISHRA

- Incidence of Endophthalmitis after Intravitreal injections: Risk factors, microbiology profile and clinical outcomes from a tertiary centre

DR. SONALI LOMTE

- Anatomical and functional outcomes of macular hole surgery in patients with high myopia

DR. MAHIMA JHINGAN

- Idiopathic macular teleangiectasias and co-existent diabetic retinopathy

DR. KIM

- Newer visualisation techniques for VR surgery

DR. S. BALAMURUGAN

- Spectrum of infectious posterior uveitis

DR. PRATYUSHA

- RetiLAPP (Best Video)
- Hemorrhagic CD in SFIOL

Dr. Shah Prateek and Dr. Adetunji Adenekan participated in the conference.

Annual Conference of American Academy of Ophthalmology

New Orleans, USA, November 10-14, 2017

DR. S.R. RATHINAM

- Chikungunya uveitis

She was also the panelist in the Paediatric Uveitis session.

DR. HARIPRIYA ARAVIND

- Aravind pseudoeffoliation study - 5 year postoperative results and Endophthalmitis reduction with intracameral moxifloxacin prophylaxis : Analysis of one million surgeries

She was a panelist in the Spotlight on cataract surgery.

DR. LALITHA PRAJNA

- Laboratory diagnostic methods in fungal keratitis

Dr. Revathi was the Co-instructor for the instruction course on Fungal Keratitis.

Dr. Manas Nath's video titled Managing double trouble: How to overcome this surgical challenge was the second most viewed video by the audience.



Dr. S.R. Rathinam at AAO conference, Focal Points stall. Her paper on Tubercular Uveitis was published in Focal Points in December 2017

R.D. Thulasiraj, Dr. Shivananda N, Dr. Sherin Haroon, Dr. George J Manayath, Dr. Radhika T and Dr. A. Syed Mohideen Abdul Khadar participated in the conference.

Comprehensive Cataract Conference

Chennai, December 1-3, 2017

DR. SHIVAKUMAR CHANDRASEKHAR

- Quality workshop: Measuring outcomes- (What & Why)
- Talking small pupils with SICS

He also performed live surgery.

DR. V.R. VIVEKANADAN

- Cataract surgery in hard cataracts

DR. AMISH SHAH

- Correct patient, correct eye, correct procedure
- Effect of morphology of posterior polar cataract on surgical & visual outcome following phacoemulsification surgery

DR. ZERVIN BAAM

- Correct IOL power and design
- Safety and efficacy of sub-tenon's anaesthesia in large volume cataract setup
- Verion versus slit lamp manual marking in Toric IOL implantation

DR. HEMANT

- Informed decision making

DR. GOMATHI RAMYA

- Systems to reduce surgical complications

DR. MADHU SHEKHAR

- Manual SICS in subluxated cataract

DR. SEEMA

- Outcomes of air Descemetopexy in post cataract surgery DMD
- Innovative Video - Simcoe assisted cataract surgery

DR. R. VENKATESH

- Ophthalmic Premier League- Systems to reduce surgical complications

DR. PRABHU

- Simple Silicone Stopper, XNIT

Fourth World Congress of Paediatric Ophthalmology and Strabismus (WCPOS) 2017

Hyderabad, December 1-3, 2017

DR. MEENAKSHI. R

- Identifying barriers to follow-up under 0-5 years age group: preschool visual screening in southern India

DR. NEELAM PAWAR

- Retinal nerve fibre layer thickness and interocular symmetry in normal paediatric population measured with Cirrus HD optical coherence tomography

DR. FATHIMA. A

- Prospective study of clinical characteristics and outcomes of surgical and conservative management of intermittent exotropia in paediatric and adult age group

DR. SAMYUKTA SADASIVAN

- Efficacy and safety of topical Tacrolimus ointment (0.03%) in the treatment of vernal kerato conjunctivitis (VKC) in the paediatric population in a tertiary eye care centre in south India

DR. ANKITA BISANI

- Congenital corneal anaesthesia: A case series

DR. NEELAM PAWAR, DR. MEENAKSHI. R, DR. ANKITA BISANI

- Lens thickness in different morphological paediatric cataract: Paediatric biometry by IOL master 700

DR. MEENAKSHI. R, DR. NEELAM PAWAR, DR. ANKITA BISANI

- Non compliance for wearing spectacles: Prevalence and determinants in school aged children in southern India

DR. SNEHAL GADE

- In a hypo eye superiors to the rescue

DR. SHASHIKANT SHETTY

- Co-chaired the session and presented Improving diagnostic Acumen in Nystagmus & eye movements - what you need to know; Management of large head posture with Nystagmus

DR. RUTIKA KHADSE, DR. NEELAM PAWAR, DR. MEENAKSHI. R

- Ocular hypertensive response to ocular steroids in paediatric patients in south Indian population: A prospective case series

DR. SAMYUKTA SADASIVAN, DR. NEELAM PAWAR,

DR. MEENAKSHI. R

- Optic nerve aplasia: A case report

DR. RUTIKA KHADSE, DR. NEELAM PAWAR, DR. MEENAKSHI. R

- Paediatric cranial nerve palsies: A case series

DR. NEELAM PAWAR, DR. MEENAKSHI. R, DR. RUTIKA KHADSE

- Botox to double augmentation: Journey of sixth nerve palsy

DR. SAMYUKTA SADASIVAN

- The disc in its full glory: An unusual case - Morning Glory disc anomaly

DR. P. VIJAYALAKSHMI

- Overview of cortical visual impairment - impact on low vision;
- How to raise interest in paediatric ophthalmology & strabismus speciality among residents?
- CVI: An international perspective.

She participated in discussion on genetic collaboration and research.

DR. SAHITHYA

- Horizontal gaze palsy with progressive scoliosis
- Hospital based study of children with visual impairment who availed vision rehabilitation services in a year
- Protocol development and its application for functional and cognitive vision assessment in children with Autism

DR. RUPA

- Visual Evoked Potential (VEP) in children in evaluating the visual pathway integrity in difficult ocular pathology

DR. SATHYA T RAVILLA

- Surgical Management of an 8-ball Hyphema
- Ten year analysis of trend in presentation of paediatric cataract in a tertiary eye care centre
- Intra-trochlear steroid injections in Acquired Brown's syndrome- A case series

DR. ANUKUL DIXIT

- 0-3 spectrum of eye diseases
- Surgical outcomes in MED

DR. SHRUTI AGARWAL

- Heavy eye syndrome
- Plicating the yokoyama for large heavy eye syndrome

DR. JYOTI SONAWANE

- Optic capture

DR. ANSHULEE SOOD

- Bilateral medial rectus
- Obesity
- Solonolece and cataract

DR. SANDRA GANESH

- Low vision screening, treatment and services provisions project for children in Coimbatore-Analysis of USAID funded Child Blindness Project (CBP)

DR. FREDRICK

- Effectiveness of portable vision screener in detecting visual impairment in special children

DR. K. VEENA

- Mission impossible made possible by vision screener
- Screening one million children for visual impairment and blindness: A community based model

DR. ANJALI

- Post-operative outcome of secondary IOL implantation with posterior optic capture in posterior capsulorhexis in paediatric age group

Dr. Veena and Dr. Fredrick at the Fourth World Congress of Paediatric Ophthalmology and Strabismus, Hyderabad



DR. MAHESH

- Unusual ocular association in neurofibromatosis type -I: A rare case report
- Double elevator palsy-complexities & outcome

Ms. MUTHULAKSHMI

- Case presentation at Orthoptics symposium

Dr. Isac Vasco Da Gama attended the conference.

PANIIM World Management Conference

Lucknow, December 14, 2017

R.D.Thulasiraj attended the conference as panelist for the session Digital healthcare: Challenges and opportunities.

11th Asia-Pacific Vitreo Retina Society (APVRS) Congress 2017

Kuala Lumpur, Malaysia, December 8 - 10, 2017

DR. KARTHI KUMAR

- Incidence of retinal detachment after laser photocoagulation in patient with FEVR

DR. RENU P RAJAN

- Anatomical and functional outcomes of vitrectomy surgery in myopic macular holes

DR. HAEMOGLOBIN

- An unusual presentation of retinal sheen- Muller cell sheen dystrophy

DR. VENUGOPAL REDDY, DR. ANUJ, DR. ADHEESH

- The I and THE EYE
- Clinical outcome after combined pars plana vitrectomy and Pars plana tube placement of Aurolab Aqueous drainage implant in patients with Refractory Glaucoma

Annual Conference of Strabismus and Paediatric Ophthalmological Society of India (SPOSI)

New Delhi, December 09-10, 2017

DR. EASHA RAMAWAT

- Clinical association of congenital cataract in children less than one year of age

Keracon

Hyderabad, December 15-17, 2017

DR. N. VENKATESH PRAJNA

- Anti-fungal defence and tear proteomics
- Corneal Intraepithelial Neoplasia (Photo)

DR. MANORANJAN DAS

- Outcomes of combined descemets stripping automated endothelial keratopathy with manual SICS
- Management of traumatic Iris cyst and complicated cataract

DR. ARUNKUMAR PANIGRAHI

- Role of fibrin glue in perforated DALK
- ASOCT - Iris Cyst (Photo)
- Sclerokeratitis (Photo)
- Epithelial ingrowth (Photo)

DR. LUMBINI DEVI

- Lens expulsion (Photo)
- Lattice Dystrophy (Photo)

DR. ASISH KUMAR

- Management of Expulsive Haemorrhage
- ASOCT - Remnant Host DM (Photo)
- ASOCT - Double AC in DALK (Photo)
- Extrusion of KPRO (Photo)

DR. NAVEEN

- CXL without UVA
- Descemets Stripping Automated Endothelial keratoplasty (DSAEK) and tube shortening for corneal decompensation due to Aurolab Aqueous Drainage Implant
- Red Lightning - Fascicular ulcer (Photo)
- Lattice Dystrophy Retroillumination (Photo)
- Recurrence of Avellino (Photo)

DR. ANITA RAGHAVAN

- Confocal microscopy dilemmas

DR. PREETHIKA GANDHI

- Microbiological profile of corneo scleral rims following storage in cornisol medium

DR. NILAM GOHIL

- Non-contact meibography as a diagnostic tool in dry eye management

Mr. R.D. Thulasiraj addressing the audience at PANIIM World Management Conference, Lucknow



Dr. Haemoglobin, Dr. Renu P Rajan, Dr. Karthikumar and Dr. Naresh Babu at APVRS 2017, Kuala Lumpur





Dr. Manali Hazarika, Dr. Nihaal Ahmed, Dr. Ashish Kumar and Dr. Manoranjan Das Aravind team at Keracon 2017, Hyderabad

DR. RAMYA SEETHAM RAJU

- Activation of alternative complement pathway in fungal keratitis
- Slit lamp category: Pseudo dendrite (Photo)
- Conjunctival angioma (Photo)

DR. KISHAN A. PRAJAPAT

- Microsporidial stromal keratitis and its management
- Contact lens vascularisation (Photo)
- Lipid keratopathy (Photo)

DR. HASIKA RAVULA

- Keratitis caused by *pythium insidiosum* - an emerging pathogen
- Nonspecific corneal ring (Photo)
- Post herpetic pigmentation (Photo)

DR. PUJA RAI

- Therapeutic keratoplasty with optical grade tissue
- DSAEK for corneal decompensation due to glaucoma drainage device

DR. MOHANA PREETHI

- Conventional therapeutic keratoplasty in large recalcitrant corneal ulcers
- Study correlating prognostic factors related to visual recovery in open globe injuries
- Lattice dystrophy (Photo)
- Rhinosporidiosis (Photo)
- Intraocular foreign bodies (Photo)

DR. SIVARAMA KRISHANAN

- Pseudodendrite (Photo)
- Ghost vessel (Photo)

DR. NIHAL AHMED

- Non-contact meibography as a diagnostic tool in dry eye management

DR. MANGALA

- DSEK - an alternative to PKP in failed graft

DR. REVATHI

- Medical Management of PUK

DR. PRABHU

- Aberration analysis in keratoconus and its clinical application



Dr. R. Kim and Dr. P. Sundaresan with the delegates at Asia Pacific Academy of Ophthalmology Congress, Hongkong

DR. CHRISTY

- Triple trouble VKC with LSCD in keratoconus.
- Does the corneal retrieval programme require a re-orientation?

DR. SINDHU

- Steroid induced interface fluid syndrome

UK Paediatric Glaucoma Society Meeting

London, UK, January 26

DR. MANJU R PILLAI

- Caregivers' burden in childhood glaucoma

33rd Asia Pacific Academy of Ophthalmology Congress

Hong Kong, February 8-11, 2018

DR. R.D. RAVINDRAN

- Empowering prevention of blindness through refining priorities and policies for eye health

DR. R. KIM

- Artificial intelligence based screening in ophthalmology - From algorithm to real world practice

DR. USHA KIM

- Empowering prevention of blindness for fighting major causes of visual impairment and low vision
- Creating eye care access through vision centres
- Fungal diseases of the orbit

DR. MAHESH KUMAR

- Neuro-ophthalmic emergencies- pituitary apoplexy
- Common neuro-ophthalmic scenarios - mimickers of retrobulbar optic neuritis

DR. P. SUNDARESAN

- Molecular genetics of POAG- Especially SIX6 gene involvement in the pathogenesis

International Autism Conference: Pathways to an Inclusive Life

Mumbai, February 23-24, 2018

FLORA JOHN

- Functional and cognitive vision assessment on children with Autism spectrum disorder

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Dr. G. Venkataswamy addressing a gathering in blindness prevention work in the '60s

In the last two and a half decades, LAICO has grown tremendously, bringing in systems and practices enabling better eye care delivery to organisations across the world. LAICO's work receives widespread acclaim in the healthcare field and the organisation is often invited to help draft national eye care programmes of several countries.

Since establishment in 1992, the institute through capacity building and consultancy has partnered with 345 eye care institutions around the world and among them are about 130 Lions Eye Hospitals. In this silver jubilee year of LAICO's establishment, the organisation had the privilege of hosting LCIF's International President, Dr. Naresh Aggarwal on August 18, 2017. Dr. Naresh formally inaugurated LAICO's silver jubilee celebrations in the presence of PMJF. Lion. T. Thanikodi, District Governor - 324 B3, Ln. P.S. Ranganathan, PID, Ln. Gopalakrishna Raja, Grant Administrator, LAICO and the senior leaders of Aravind.

Strategic planning workshop for the participant hospitals of ACCESS



Capacity Building Programmes and Consultancy

LAICO, in collaboration with Hilton Foundation and Dana Center for Preventive Ophthalmology, was engaged in a project to build capacity of select five eye hospitals in sub-Saharan Africa to perform at least 5000 cataract surgeries annually. The hospitals were:

- Kitwe Central Hospital, Zambia
- Innovation Eye Centre, Kenya
- Fitsum Birhan Specialty Eye Centre, Ethiopia
- UHEAL Foundation, Kenya
- Deseret Community Vision Institute, Nigeria

Although these hospitals could not achieve the set targets due to various challenges, the hospital teams, LAICO and Dana Center strongly felt the need for continuity of the support. Hilton Foundation generously came forward to support the hospitals for another three years until 2020. Towards this, a strategic planning workshop was conducted at LAICO from April 21 to 26, 2017 and the second phase of the project was given the title, ACCESS - African Centres of Excellence in Cataract Surgical Services Network. In the end of 2017, follow up visits were made to these hospitals to provide continuing support.

Aravind signed MoU with the Ministry of Health and Family Welfare, Govt. of Bangladesh on August 6, 2017 for providing continuing support to the national eye care programme. As an initial step, 20 vision centres will be established in various areas of the country in 2018.

Consultancy and Capacity Building



Mr. R.D. Thulasiraj after signing MoU with the Ministry of Health and Family Welfare, Govt. of Bangladesh

Review Meetings

LAICO organises project review meetings with partnering hospitals to assess the progress of the project towards its goals and facilitate development through cross-learning. A review meeting for the six mentor hospitals under SCALE project was organised at Sadguru Netra Chikitsalaya, Chitrakoot from August 25 to 27, 2017. Review meeting for the hospitals under Lavelle and So-hum capacity building projects was organised at Shroff's Eye Hospital, New Delhi from October 10 to 11, 2017.

Teaching and Training

Apart from the ten structured courses, LAICO offers several customised training programmes in the management aspects of eye care delivery including Medical record management and Vision centre management. A total of 245 persons attended these training programmes.

Participants at the Workshop for Patient Care Counsellors at LAICO



Eyexcel Latin America Planning Meet

Guatemala, December 11-14, 2017

Ms. Dhivya Ramasamy, Senior Faculty, LAICO attended the planning meet and shared inputs for the launch of Eyexcel for Latin American region, scheduled for June 2018 in Guatemala. Eyexcel alumni teams from Visualiza Eye Centre, Guatemala and Divino Nino Jesus Eye Hospital, Peru are jointly developing and offering this course.

Workshop for Patient Care Counsellors

Aravind-Madurai, January 5-6, 2018

Offered upon request from Vision 2020 India, the workshop aimed to build capacities of the counsellors to effectively counsel the patients to make them comply with treatment. A total of 77 counsellors from all over India participated.

All India Ophthalmic Conference (AIOC) Open House Leadership Development

Aravind-Coimbatore, February 21, 2018

LAICO facilitated the session meant for ophthalmologists who play a role as a leader or an administrator of an eye hospital. The programme held as part of the Annual Conference of All India Ophthalmic Society helped the participants introspect into the various aspects of strategic planning and hospital management. A total of 40 ophthalmologists participated.

Online Education

Aurosiksha, the dedicated online portal for training is continuously updated with new resources for the trainers of Allied Ophthalmic Personnel following the



Participants of AIOC open house leadership development programme

competency-based training model. These resources are developed, reviewed and tested according to adult learning principles and comprise teaching materials, teaching guides, practice steps, assessments and reference materials. This year, the portal has been updated with training resources for 36 skill based competencies and 57 knowledge-based competencies.

Onsite Training

Onsite Workshop on Management Priorities for Heads of Eye Hospitals

Guangzhou, China, November 3-5, 2017

A total of 37 persons from various provinces of China with varied experience levels, from start-up practitioners, to large institutional practitioners

participated in the workshop. The workshop covered key management areas such as, how to increase patient volumes, operations management, quality assurance, evidence-based decision making and human resource development. The workshop was organised by Dr. Mingguang He of Zhongshan Ophthalmic Centre. The core faculty team comprised R.D. Thulasiraj, Executive Director, LAICO; Dr. Shivkumar Chandrashekarhan, Chief, Cataract Services, Aravind-Tirunelveli and Dhivya Ramasamy, Senior Faculty, LAICO along with Dr. Hao Xiaojun, former fellow, Aravind-Tirunelveli.

Ophthalmic Instruments Maintenance Training Programmes

- At Central Hospital, Mzuzu, Malawi from September 4-15, 2017. Organised by Brien Holden Vision

Aravind team with the participants of Workshop on Management Priorities for Heads of Eye Hospital at Guangzhou, China



- Institute. Attended by 11 participants from various parts of Malawi.
- At Central Hospital, Beira, Mozambique from September 18-30, 2017. Organised by Light for the World International, Mozambique. A total of 12 participants from various parts of Mozambique attended.
- At Magrabi ICO Cameroon Eye Institute, Oback, Yaoundé, Cameroon. A total of 11 participants from Cameroon, Gabon and Burkino Faso attended.

October Summit 2017

Architectural Design of Eye Hospitals

Aravind-Madurai, October 4-5

The workshop was designed as a forum to pool all learning of what worked and what didn't, so that going forward, the participants will have a growing body of knowledge and expertise for designing eye hospitals that work well, promote efficiency and appeal to patients and their relatives. A total of 53 persons participated.

Improving Patient Compliance with Cataract Services

Aravind-Madurai, October 6-7

The conference brought together eye care organisations to collaborate in finding innovative solutions for the problem of non-compliance among cataract patients and to apply the lessons learnt from this to that of other eye conditions. About 40 persons from different cadres in eye care work participated.

Instruments Maintenance course at Central Hospital, Mzuzu, Malawi



Study Design and Manuscript Writing

Aravind-Madurai, October 10-11

Planned for Aravind staff with a research background, this workshop provided a forum for the participants to discuss and apply appropriate scientific methodology in their proposed research study and help them gain skills in scientific writing. A total of 22 staff from various Aravind centres participated.

Health Services Research

The year 2017-18 was yet another productive year for the health services research activities at Aravind. One important initiative was the intensive research methodology training organised for the staff who are enthusiastic to take up research projects leading to publications. Fifteen participants including medical officers, managers from across the Aravind Eye Hospitals and staff members from LAICO and AMRF successfully completed the 4-month long training. As a sign of enhanced focus on health service research, around 15 studies were designed and executed. Last year saw around 10 international student volunteers assisting various research projects led by Aravind researchers. Staff members from Biostatistics Department and LAICO underwent research methodology training in external institutions. There was very active participation in the Annual National Conference of Vision2020 with the Aravind team presenting around 10 free papers/scientific posters.

Ongoing Health Systems Research Projects

1. Understanding the factors that affect patients with Glaucoma presenting early and late to a tertiary eye hospital in southern India

At the Workshop on Architectural Design of Eye Hospitals at LAICO



Projects

LAICO provides project management support to the implementation of various projects at Aravind. The support is in the areas of proposal development, coordination and communication with the funding agency and project team for effective implementation of activities, budget utilisation, monitoring and reporting.

Projects currently managed by LAICO, (More details in Patient Care section)

- ORBIS-REACH Project
- SiB- Scope projects
 - Affordable treatment for low socio-economic patients with painful corneal ulcers, Aravind-Madurai
 - On-site diagnosis and management of Retinopathy of Prematurity (RoP) in new-born babies, Aravind-Tirunelveli
 - Enhancing the quality of outreach with better equipment to enhance case detection and developing Electronic Medical Record (EMR) to ensure continuity of care, Aravind-Pondicherry
 - Equipment support for better diagnosis of corneal ulcers for timely and appropriate surgical intervention, Aravind-Madurai
 - Developing an enhanced corneal preservative medium, Aravind-Madurai and Aurolab
- QEDJT - PHFI Diabetic Retinopathy project, Aravind-Tirunelveli
- Eye Care for Tibetan refugees in India, Aravind-Coimbatore
- Allergan supported projects on strengthening Diabetic Retinopathy screening and awareness, Aravind-Madurai
- FDC Limited, Mumbai supported project on ROP, Aravind-Theni
- TOPCON supported Vision for all Project, Aravind-Theni

2. Understanding the factors influencing patients who present early and late to diabetic retinopathy services at a tertiary eye hospital in southern India
3. Effect of text/voice SMS reminders in improving compliance to follow up among Glaucoma patients
4. Impact of outreach screening camps on walk-in patients at an eye hospital.
5. A randomized controlled trial to study the effect of peer group education in enhancing comprehension and compliance in patients diagnosed with Primary Open Angle Glaucoma
6. Routine fundus photography screening for posterior segment disease: A stepped-wedge, cluster-randomized trial in southern India
7. Evaluation of effectiveness of a low-cost, portable, accurate autorefractor developed by PlenOptika-Aurolab to provide well-tolerated eyeglass prescriptions
8. Effectiveness of tele-ophthalmology in diagnosing and managing eye diseases in rural southern India

Participants at the Workshop on Study Design and Manuscript Writing





*Dr. V with Dr. Leon Ellwein and Dr. Carl Kupfer -
Operations Research project meeting in 1985*



*Dr. V, Dr. R.R. Doshi and Dr. A. Krishnamoorthy at
the Xerophthalmia study at Chikodra Eye Hospital,
Gujarat in 1971*

Aravind's research activities were considerably expanded this year especially with the start of two major research programmes - the Indo-UK project on Diabetic Retinopathy (DR) and the study of serum and urine biomarkers. The long-awaited paediatric genetics project has been initiated with funding from the Department of Biotechnology, Government of India. As in the previous years, the research activities have been supported by a generous donation from Sun Pharma. With all these new initiatives, AMRF is looking forward to reach higher levels of basic research - to understand pathological mechanisms underlying the disease and translational research - where the outcome of basic research is translated to methods to improve disease management.

Proteomics

Proteomics research at Aravind focuses on three eye diseases - Fungal Keratitis, DR and Keratoconus. The translational research activities involve identification of biomarkers with predictive or prognostic values as in Fungal Keratitis and DR or to formulate a newer, effective treatment option as in Keratoconus. Fungal Keratitis patients are conventionally treated with



Research students at work in the Proteomics lab

anti-fungal drugs and many patients do not respond to treatment. Studies at Aravind aim to develop a model that can predict the clinical outcome even before the treatment is initiated. This model will help the corneal surgeons to decide on an early surgery for patients who are more likely to be non-responders of anti-fungal treatment.

In the Diabetic Retinopathy study, a serum proteomics approach allowed the identification of multiple proteins in serum that were altered in DR patients. Additional studies are in progress to prove validate a panel of markers that can identify the high risk individuals among diabetics who will develop DR or DR patients who might have poor prognosis.

Workshop on Novel chemical cross-linking for the treatment of keratoconus, Aravind-Madurai



Research

A novel chemical cross-linker for the treatment of Keratoconus is being developed through a collaborative project involving AMRF, Aurolab and the University of Liverpool. This treatment option is currently being evaluated as an alternative to conventional UV-A cross-linking treatment. Efforts are on to develop a clinical packaging and a topical eye-drop formulation of the cross-linker by Aurolab for further trials.

Stem Cell Biology

The focus of research in this department is to understand the basic biology of adult tissue resident stem cells in the human eye. Extensive studies were carried out on stem cells of the corneal epithelium - limbal epithelial stem cells with reference to its identification and quantification as well as culturing these stem cells for corneal surface reconstruction in patients with limbal stem cell deficiency with 25% success. The current thrust of research is on understanding the molecular regulation of these limbal epithelial stem cells by the small, non-coding RNA - miRNAs. A new project on trabecular meshwork stem cells has been initiated to identify, quantify and understand their role in ageing and Glaucoma. Thus elucidating the basic biology of these adult stem cells will enable the team to develop better cell-based therapy for both corneal surface disorders and primary open angle glaucoma.

Ocular Pharmacology

The main focus of research is to understand the molecular mechanism(s) involved in the pathogenesis and to develop appropriate inhibitors for the management of the major form of glaucoma, i.e. Primary Open Angle Glaucoma (POAG) and Glucocorticoid (GC) induced Ocular Hypertension (OHT)/glaucoma.

In POAG, the role of Rho A/ROCK signaling in the pathogenesis of glaucoma is being investigated and the development of Rho Kinase Inhibitors (RKI) as a new class of IOP lowering drugs for its management. In this line, a new molecule (SB77) has been tested for its IOP lowering property in normal and mechanical stress ex vivo model systems. The tested molecule showed promising results and may be a potential candidate for the management of glaucoma.

Steroid is an excellent anti-inflammatory agent used for the management of various inflammatory eye diseases. Extended usage of steroids causes increased



Ocular pharmacology lab

intraocular pressure (IOP) as a side effect in susceptible individuals and a certain proportion of them will develop glaucoma. Further, the treatment of steroid in POAG patients will aggravate the disease condition leading to blindness. The increased IOP is caused by changes in a tissue called Trabecular Meshwork (TM) in the eye. However, the molecular mechanism for such changes in TM is not clearly understood. The team is culturing the anterior segment of the human cadaver eyes to answer this question. Studies are underway to identify the list of differentially expressed genes related to steroid responsiveness and non-responsiveness.

Molecular Genetics

The department focuses its research to identify candidate genes in the development of POAG, which will improve understanding towards the pathophysiological mechanism of the disease, accuracy of diagnosis and treatment regimen. Genetic basis of primary angle closure glaucoma in south Indian patients is also being investigated. Unlike the western world, Macular Corneal Dystrophy (MCD) is the most common corneal stromal dystrophy in India. The disease is highly prevalent in south Indian population as reported which could be due to high frequency of consanguineous marriages.

Research in Retinoblastoma (RB) is focused on developing molecular methods for early detection of the tumor and understanding the mechanism of the tumor development and treatment failure. Currently, a rapid and sensitive method of mutation detection is being employed for RB1 genetic testing. This method was developed indigenously for cutting down the



Molecular Genetics Laboratory

cost for the benefit of patients. This method of genetic testing is now also available for adult patients who are under regular follow-up and willing to know the risk of developing secondary malignancies and also Retinoblastoma in their offspring. Aravind-Madurai offers this service for RB patients across the country. For studying the mechanism of tumor development, a customised gene panel was developed and used for the analysis of copy number loss or gains in retinoblastoma associated genes and mutations in the tumor associated genes. The gene expression levels corresponding to the changes were also being studied. Towards the understanding of the treatment failure in few patients, the expression of the genes encoding drug transporter pumps were studied and found to be differentially regulated in RB. Apart from the genomic alterations, new studies focusing on the role of epigenetics where the changes are not directly observed at the sequence level are also being carried out.

Ocular Microbiology

The major research focus is on developing and evaluating the more sensitive and reliable molecular methods for the diagnosis of ocular pathogens and also on elucidating the cellular and molecular events that determine disease progression and treatment outcome in corneal infections. The lab employed conventional PCR, Nested PCR and multiplex PCR as part of routine diagnosis along with microbiological findings.

Currently, the team standardised conditions for the real time PCR targeting viral pathogens (HSV, VZV and CMV), Toxoplasma, Mycobacterium, Bacterial 16s rDNA and Fungal 28rDNA. Real time PCR are far more reliable, less time consuming and provide additional

information such as pathogen load, which informs the severity of infection. Using the molecular sequencing of the bacterial and fungal DNA, new novel species causing ocular infection which was not reported previously were also identified. The team also employed multi-locus sequence typing (MLST) for the identification of the *Fusarium* sp, which is difficult to identify by conventional microbiological methods like culturing and microscopy.

Apart from the routine diagnosis, the lab is also actively engaged in understanding the pathogenesis of the bacterial and fungal pathogens. Pathogens exhibit various mechanisms of drug resistance, drug tolerance, virulence and intracellular survival patterns to protect themselves from antibiotics and host innate defenses. Further work is in progress to screen for gene mutations and underlying molecular mechanism responsible for the antibiotic resistance in both bacterial and fungal pathogens.

The department is also involved in the Asia Cornea Society of Infectious Keratitis Study which is a multi-centre study involving national and international eye institutes from the Asian continent.

Bioinformatics

The primary focus is to develop and apply bioinformatics methods for analysing genomic variations associated with eye diseases and discovering hidden biological knowledge in the next generation sequence data sets. An automated pipeline developed for clinical exome sequencing data set yielded accurate variant calling for whole exome data sets of patients with eye diseases. Rare and novel disease-causing variants were identified in patients with Retinoblastoma and POAG.

A study on ocular isolates from keratitis patients was carried out to link genetic basis of bacteria with different outcome of the patients by combining clinical and whole genome sequencing data. *P.aeruginosa* isolates from keratitis patients who underwent surgery prefer either ExoU or ExoS for the infection, not both the phenotype. They also carry *fliC* gene or multiple drug resistance mechanisms. Further, identification of virulence associated genes and deeper understanding of drug resistance is being carried out to find the reasons for treatment failure and suggest better disease management.

Conferences/Workshops Conducted

24th Annual Meeting of Indian Eye Research Group: ARVO-India Chapter

July 29-30, 2017

At the meeting hosted by Aravind-Madurai, a total of 146 participants attended including 30 invited faculty. The meeting had 103 presentations; two orations, 15 invited talks, 17 free papers and 69 posters. Special breakout sessions on recent advances in Microbiology and Immunology, Genomics and Proteomics, Cell and Molecular Biology, Biochemistry and Pharmacology and Clinician Researcher Interface were conducted to discuss the current status in India.

The meeting was supported financially by the Department of Biotechnology, Science and Engineering Research Board, Indian Council of Medical Research, Council of Scientific and Industrial Research as well as by the sponsorship from Spinco Biotech Pvt. Ltd., Agilent Technologies, Fortune Bioservices Pvt. Ltd., GE Healthcare, Genotypic Technology Pvt. Ltd. and Ponmani Chem-Glass Agencies.

Workshop on Novel Chemical Cross-linking for the Treatment of Keratoconus

November 18, 2017

The main objective of this workshop held at Madurai was to bring together clinicians and researchers on a single platform to discuss the importance of the novel chemical cross-linker being developed to treat Keratoconus and its advantages over the conventional UV-crosslinking. The novel cross-linker is being tested through a collaborative project involving University of Liverpool, Aravind Eye Hospital, Aravind Medical Research Foundation and Aurolab.

Poster presentation at RAC Meeting



Clinicians from various centres of Aravind Eye Hospital, researchers from AMRF, University of Liverpool, Narayana Nethralaya and representatives of Aurolab attended this meeting.

Brainstorming Session on Proteomics in Health Care

January 4, 2018

The main objective of this session was to emphasise the growing importance of proteomics in health care. Experts in the field of proteomics namely Prof. Kumaravel Somasundaram, Indian Institute of Science; Prof. S. Karuthapandian, Alagappa University; Prof. Balamurugan, Alagappa University and Dr. Kathiresan, Kalasalingam University delivered talks. The speakers provided a detailed description of their research findings and how proteomics was used as the technology platform in their research.

16th Research Advisory Committee Meeting

March 24, 2018

Faculty members of AMRF presented their work and received feedback. Poster presentations by the research scholars and clinicians were evaluated by a panel consisting of Dr. Ch.Mohan Rao, Former Director and Sir JC Bose National Fellow, Centre for Cellular and Molecular Biology, Hyderabad; Prof. S. Karuthapandian, Head, Department of Biotechnology, Alagappa University, Karaikudi; Prof. S. Murty Srinivasula, School of Biology, Indian Institute of Science Education and Research, Thiruvananthapuram and Dr. Sharmila, Medical Consultant, Glaucoma Services, Aravind Eye Hospital, Madurai. K. Lavanya, Department of Immunology and Stem Cell Biology was selected for Prof. VR. Muthukkaruppan Endowment award. Posters from Aravind-Coimbatore were selected for the first and second place respectively in the poster competition held for clinicians.

Internal Capacity Building

- K. Lavanya, Junior Research Fellow visited the research facility at Schepens Eye Research Institute, Boston and Rockefeller University, New York in June 2017.
- S.Yogapriya, Junior Research Fellow visited Dr. Ula Jurkna's lab at Schepens Eye Research Institute and Dr. Janey Wiggs lab at Massachusetts Eye and Ear Hospital, Boston in June 2017.
- Mohd Hussain Shah, Senior Research Fellow visited the research facility at National Eye Institute (NEI),

Bethesda in May 2017 and got an opportunity to interact with the scientists there and present his research work.

Ongoing Basic Research Projects

- Research on Human Mycotic Keratitis
- Predictive biomarkers for diabetic retinopathy among diabetics and stage specific biomarkers for NPDR and PDR.
- Pathogenic *Aspergillus*: Interaction with innate immune cells
- Prospective multicentre discovery and validation of diagnostic circulating and urinary biomarkers and development of sensor(s) to detect sight threatening diabetic retinopathy - biomarker and biosensor study in UK and India
- Functional analysis of circulating microRNAs and their regulatory role in Diabetic Retinopathy
- Novel chemical cross-linking of the cornea for the treatment of Keratoconus
- Molecular genetics of Macular Corneal Dystrophy (MCD) in Indian population
- Genetic and transcript analysis of RBL gene in south Indian retinoblastoma patients
- Genetics of Retinal Dystrophies
- Understanding the molecular mechanisms of chemoresistance in Retinoblastoma
- Molecular characterization of tumor progression in Retinoblastoma
- Limbal miRNAs and their potential targets associated with the maintenance of stemness
- Characterization and functional evaluation of trabecular meshwork stem cells in Glaucoma pathogenesis
- Studying the Role of Rho A – Rock Signalling in conventional outflow pathway using Human Organ Culture Anterior Segment (HOCAS)
- Role of miRNA in the regulation of Glucocorticoid Receptor (GR) signalling and development of new therapeutics for Steroid-induced glaucoma
- Clinical exome analysis pipeline for eye disease next-generation sequencing panel
- Translational genomics of paediatric eye diseases
- Diagnostic markers for Ocular Tuberculosis
- Analysis of bacterial persistence mechanisms in recalcitrant ocular *Pseudomonas aeruginosa* infections
- KAP studies on risk factors of ocular leptospirosis in south and using KAP as a parameter of impact evaluation of the diseases

Ongoing Clinical Research

Cataract

- APEX-A prospective, multicentric, randomised controlled, study on long term outcomes of Phacoemulsification with intraocular lens implantation in pseudo exfoliation syndrome patients
- A prospective, non-randomized, single arm, open label Study to evaluate the efficacy of multifocal intraocular lenses with patients having cataract in both eyes
- Visual performance comparison between Phacoemulsification and manual small incision cataract surgery in eyes with senile Cataract - A prospective randomised clinical trial
- Prostaglandin level estimation in phacoemulsification and Femtosecond laser assisted cataract surgery with and without NSAID and correlation with post-operative inflammation and cystoid macular edema
- Prospective intracameral moxifloxacin endothelial safety study in patients having cataract surgery comparing 500 mcg/0.1 ml in one eye and 250 mcg/0.1ml in the opposite eye.
- Evaluation of posterior capsular changes, IOL glistening and visual outcome after implantation of Vivinex TM intraocular lens (IOL) in routine clinical practice
- Visual outcomes of SMART SICS
- A retrospective study of causes of poor visual outcome in cataract surgery patients (phacoemulsification)
- Comparative study of pre-operative reference marking for Toric Intraocular lens by manual toric marker over slit-lamp and by electronic device (ASICO TORIC MARKER)
- Comparison of intraoperative posterior capsular rent (PCR) and Zonular dialysis (ZD) in mature cataracts in SICS and Phacoemulsification at Aravind Eye Hospital, Madurai

Uvea

- Efficacy and safety of posterior subtenon's triamcinolone acetonide, intravitreal triamcinolone acetonide, intravitreal bevacizumab, intravitreal ozurdex for treatment of uveitic cystoid macula edema
- First-Line Antimetabolites as Steroid-sparing Treatment (FAST) Uveitis Trial
- Development of ocular diagnostic criteria for Behçet disease uveitis.

Glaucoma

- A clinical validation study for evaluating the performance of RIA-G software for automated detection of optic nerve head changes on fundus photographs/images
- Validation of the Compressed Assessment of Ability Related to Vision (CAARV), a performance based measure, in a south Indian population with Glaucoma
- A correlative study of pupillary response as measured by automated monocular pupillometer (Neuroptics plr™-3000) with retinal nerve fiber layer thickness and visual field in varying severities of glaucoma
- Surgical outcome of piggyback intraocular lens implantation after phacoemulsification in nanophthalmic eyes
- Endothelial cell loss after phacoemulsification in nanophthalmic eyes undergoing cataract surgery
- Clinical and histopathological correlation of the sclera in nanophthalmic eyes undergoing cataract surgery
- Robison D. Harley, MD CGRN International pediatric Glaucoma Registry
- Peony study: A phase III, randomized, observer-masked, active-controlled, parallel-group, multinational and multicenter study assessing the safety and efficacy of DE-117 ophthalmic solution 0.002% compared with latanoprost Ophthalmic Solution 0.005% in subjects with Open-angle glaucoma or Ocular Hypertension
- A prospective study to evaluate the reasons for hospital visit among patients with primary Glaucoma
- The Asia Primary Tube versus Trab study
- Web based personalised education To Improve Glaucoma Medication Adherence
- Knowledge and Medication adherence in glaucoma patients in South India- Hospital based study
- Quantification of Relative Afferent Pupillary Defect (RAPD) by an automated pupillometer (RAPID) and its relationship to retinal nerve fiber layer thickness and Visual fields in varying severity of glaucoma
- Anterior segment OCT imaging of conjunctival filtering blebs after mitomycin C (MMC) augmented trabeculectomy versus ologen augmented trabeculectomy
- Anterior segment OCT imaging of conjunctival filtering blebs after mitomycin C (MMC) Augmented combined surgery: subtenon injection versus soaked sponges

Vision Rehabilitation

- Hospital anxiety and depression scale assessment of patients with low vision before and after using low vision care: A prospective study in a tertiary eye-care setting

Neuro-Ophthalmology

- A phase 2/3, randomized, double-masked, sham-controlled trial of QPI-1007 delivered by single or multi-dose intravitreal injection(s) to subjects with Acute Nonarteritic Anterior Ischemic Optic Neuropathy
- Quantification of Relative Afferent Pupillary Defect (RAPD) by an automated pupillometer (RAPID) and its relationship to visual acuity, color vision, visual fields before and after treatment of patients with optic neuritis and Nonarteritic Anterior Ischemic Optic Neuropathy (NAION).

Retina

- Microperimetry biofeedback training in patients with irreversible bilateral vision deterioration
- CLS1003-301, SAPPHIRE: A randomized, masked, controlled trial to study the safety and efficacy of suprachoroidal CLS-TA in conjunction with Intravitreal Aflibercept in subjects with Retinal Vein Occlusion
- ARDA (Automated Detection Algorithm) Assisted Read study protocol
- Rainbow Extension study: 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
- A phase III randomised, double-masked, parallel group, multicentre study to compare the efficacy, safety, pharmacokinetics and immunogenicity between SB11 (proposed ranibizumab biosimilar) and Lucentis® in subjects with neovascular Age-Related Macular Degeneration
- Comparative study of visual and functional outcomes in polypoidal choroidal vasculopathy with respect to the presence of pachychoroid features
- Antibiotic sensitivity trends of Pseudomonas endophthalmitis in a tertiary eye care centre in South India: A 12- year retrospective study
- Factors influencing sclerectomy closure in 25G transconjunctival sutureless vitrectomy - A retrospective comparative study
- Fluid-silicone oil exchange over Perfluorocarbon Liquid to avoid infusion jet induced retinectomy dislodgement
- Retrospective analysis of the outcomes of diabetic Vitrectomy from a tertiary eye care centre
- Effect of Pachychoroid Features on Visual and functional outcomes in polypoidal choroidal vasculopathy
- Clinical and molecular diagnosis of selected retinal dystrophies

- Using diagnosis full-field stimulus threshold testing (D-FST) to compare dark adaptive deficits in patients with non-proliferative and proliferative diabetic retinopathy
- Quantification of RAPD by automated pupillometer and its relationship with VISUAL ACUITY and AMD dimension
- Prospective study comparing differences in surgical Performances of internal limiting membrane peeling for macular hole surgery between digitally assisted and analog microscope visualisation
- A comparative study to analyse the outcomes of large macular holes operated with ILMP with inverted flap versus autologous platelet injection versus conventional surgery
- Mechanical effects of silicone oil Vs. gas tamponade on foveal and choroidal thickness using Enhanced Depth Imaging (EDI) OCT

Paediatric Ophthalmology

- Visual functions as determinants and VEP as predictor of response to the treatment in Amblyopia
- Visual dysfunction in Autism Spectrum Disorders
- Safety and efficacy of E/d Atropine 0.01% for control of progression of myopia
- Study of accommodation in patients with Idiopathic Infantile Nystagmus (IIN)
- Assessment of distance and near stereoacuity, fusional amplitudes in patients with IXT and their change after surgery
- Assessment of reading visual acuity in patients with nystagmus
- Translational genomics of paediatric eye diseases
- Analysis of the characteristics and etiological factors of headache among various age group of paediatric patients presenting to tertiary eye care centre
- Outcomes of paediatric open globe injuries - A prospective study

Cornea

- In vitro antibiotic susceptibility trends of Pseudomonas species isolated from corneal ulcer
- Outcomes of collagen cross linking in thin corneas - A retrospective study
- Outcomes of collagen cross linking in paediatric Keratoconus - A retrospective study
- Microbiological and clinical outcomes of corneal collagen crosslinking in bacterial keratitis - A randomised control trial
- Clinical, microbiological and treatment profile of Dematiaceous fungal corneal ulcer, a retrospective study

Health Services Research

- Routine fundus photography for screening of posterior segment disease in patients visiting vision centres
- Patient experience: A comparison between tele-ophthalmology and face to face eye care consultation
- A probable change in the trend of uptake of eye care services in community outreach camps - A qualitative Study
- Assessment of the health seeking behaviour among cataract patients in the hospital vs. community - A descriptive cross sectional study
- Understanding the factors that affect patients with glaucoma presenting early and late to a tertiary eye hospital in southern India
- Understanding the factors influencing patients who present early and late to diabetic retinopathy services at a tertiary level eye hospital
- Effect of Text/Voice SMS reminders in improving compliance to follow up among Glaucoma patients
- Impact of outreach screening camps on walk-in patients at an eye hospital
- A randomised controlled trial to study the effect of peer group education in enhancing comprehension and compliance in patients diagnosed with primary open angle glaucoma
- Routine fundus photography screening for posterior segment disease:
- A stepped-wedge, cluster-randomized trial in southern India
- Evaluation of effectiveness of a low-cost, portable, accurate autorefractor developed by Plen Optika-Aurolab to provide well-tolerated eyeglass prescriptions
- Effectiveness of tele-ophthalmology in diagnosing and managing eye diseases in rural Southern India

Clinical Trials – Aurolab

- To study the safety and performance of high refractive index (HRI) cast molded hydrophobic intra ocular lenses (IOLs) with age-related cataract patients
- To investigate the safety and efficacy of phacoemulsification cataract surgery in cases having small pupil with the aid of iris hooks
- A prospective, non-randomised, single arm, open label study to evaluate the safety and performance of yellow hydrophobic aspheric intraocular lens (IOL) for the treatment of cataract
- A prospective, non-randomised, single arm, open label study to evaluate the performance of Multifocal intraocular lenses with patients having cataract in both eyes.

Aurolab's growth and product development continue to be driven by its philosophy to manufacture and supply high quality products at affordable prices. The year saw the launch of Hummingbird, Aurolab's high precision phacoemulsification unit. The market's overwhelming response to the product has been very encouraging. Aurolab's multifocal IOL too is receiving positive feedback from the ophthalmic community. Study carried out on 160 patients implanted with this IOL shows that the visual outcome from implanting this lens is in par with the best in the industry.

With the addition of 115kW solar power panels spreading an area of 16,000 sq.ft on the rooftop, Aurolab's capacity of producing renewable energy crossed 1000 units of power per day.

New Products

Hummingbird

Hummingbird is the machine of choice for every cataract specialist looking for skill enhancing cutting edge precision. The state-of-the-art fluidics makes it easy to use and provides the best quality promising minimum invasiveness and maximum effectiveness.

e-see

Aurolab developed a low-cost hand-held auto refractometer in collaboration with MIT spin-out Plenoptika. The built-in Plenoptika Wavefront Refractive Engine (WRE) technology ensures very fast and accurate testing process, thus helping the eye care professional perform refraction within a minute.

Aurovue EV Gold

Aurolab launched Aurovue EV Gold, a yellow hydrophobic, negative aspheric, foldable preloaded intraocular lens. The yellow optic partially filters blue light and provides protection to the retina. The negative aberration optic is similar to the clear Aurovue EV IOL and provides good contrast sensitivity.

Aurolab stall at All India Ophthalmic Conference, Coimbatore





e-see



Aurovue EV Gold



Hummingbird

The haptics of Aurovue EV Gold has been designed to fit in the capsular bag of varied sizes and it adapts well to the post-operative retraction of the capsular bag and ensures centration and stability of the lens.

Product portfolio extensions

Paediatric Cionni Capsular Tension Ring (CTR) was developed as an addition to the range of Aurolab's Cionni CTRs to be used in paediatric patients to stabilise the capsular bag in case of damaged or missing zonule.

A questionnaire to help the counsellors identify the right candidates for multifocal IOLs and an online tool to check the post-operative vision were developed.

Marketing Activities

Hummingbird, Aurolab's phaco unit was unveiled by Dr. Alan Crandall and Dr. G. Natchiar at the Comprehensive Cataract Conference held in Chennai on December 1, 2017.

The official launch of e-see autorefractor was done at the All India Ophthalmic Conference held in Coimbatore from February 22-25, 2018.

Aravind-Aurolab Phaco Training Centre at Aravind-Salem was inaugurated on November 25, 2017. The centre provides hands-on training for trainee surgeons and practicing surgeons to perfect their surgical skills.

A live surgery session was sponsored during the silver jubilee of Aravind Glaucoma Education Service (AGES 25) held at Aravind Eye Hospital, Pondicherry.

Dr. George V Puthuran Chief-Glaucoma Services, Aravind-Madurai performed the live surgery using Aurolab Aqueous Drainage Implant.

Aurolab organised the annual meet of its field staff from May 2 to 4, 2017 in Chennai.

Mr. Vishnu Prasad, Manager-International Marketing delivered a talk on Aravind Eye Care System (AECS) and Aurolab at the 3rd National

Manufacturing Ophthalmic Supplies

Oculoplasty Conference 2017 held in Kathmandu, Nepal in October 2017.

Aravind / Aurolab model was recognised as one among the Top Social Entrepreneurs in India at I'Preneur 2017 organised by Tata Institute of Social Sciences on December 9 and 10, 2017. Vishnu Prasad, gave a presentation on the business model of AECS providing compassionate eye care services to all without compromising on quality. The 5th Aurolab Sales Training (ASTRA) programme was conducted in LAICO from January 22 to 31, 2018 for the newly recruited sales staff.

Aurolab took part in the 18th Foundation Day celebrations of Indo-US Science and Technology Forum and showcased the low cost, portable auto refractometer.

IIM Calcutta Innovation Park in association with Department of Science and Technology, Government of India launched Smart Fifty-50 solutions to transform India. Out of 15,000 applications, Aurolab-Plenoptika product, e-see / Quicksee was recognised as one of the Smart Fifty innovations at the grand finale held on March 25, 2018.

Aurolab conducted a programme for the nurses of Aravind-Coimbatore on May 26-27, 2017 to familiarise them with the uses and features of Aurolab products.

Regulatory Activities

The ISO and CE Surveillance audits were carried out successfully. Preloaded yellow hydrophobic IOL, and multifocal IOL are awaiting CE certification. A total of 19 products received registration certificate in 8 countries. GMP audit has been successfully done by Ghana, Philippines, Ukraine and Tanzania.

Prominent Tradeshows attended

- Annual Conference of American Society of Cataract and Refractive Surgeons, Los Angeles, USA, May 6-8, 2017
- Annual Conference of European Society of Cataract and Refractive Surgeons, Lisbon, Portugal, October 7-10, 2017

- Annual Conference of American Academy of Ophthalmology, New Orleans, USA, Nov 11-14, 2017
- General Assembly of International Association of Prevention of Blindness, Kathmandu, Nepal, September 17-18, 2017

At the All India Ophthalmic Conference held at Coimbatore from February 22 to 25, 2018, premium products such as Dfine, Hummingbird and e-see were promoted. e-see attracted a good number of visitors and the team gave hands-on demo to over 500 visitors.

Aurolab took part in several state-level and regional ophthalmic conferences. In recent years, Aurolab also participated in a few non-ophthalmic conferences such as Annual Conference of Association of Plastic Surgeons of India, World Congress of Optometry and All India Optometry Conference.

HR Activities

Several welfare activities were carried out throughout the year ensuring the holistic development of employees. Healthcare awareness lectures and yoga sessions have proved to be of great use to them. All the festivals were celebrated with great vigor. The biennial cultural-cum-sports event, Auroutsav was celebrated with great team spirit. XXVIth annual day was celebrated with elaborate programmes. To provide a break from the monotonous work schedule, staff and employees were taken on excursions to various places.

Participants of Aurolab Sales Training programme



CENTRAL FUNCTIONS

Human Resources Development

Several initiatives ensuring the holistic development of staff on a personal as well as professional level were conducted across all Aravind facilities. Professional education programmes were arranged regularly to update staff on the latest trends in their respective fields.

Retreat to Rejuvenate

At Aravind the word Retreat is used when groups of people engaged in the same work across all facilities gather and think together away from their routine work. Retreats give an opportunity for staff to deliberate on the challenges faced and discuss plans towards providing better patient care, improving research and training. Retreat for the staff of Glaucoma clinics across the centres was organised at Sri Aurobindo Society and Pegasus Institute at Pondicherry on December 15, 2017. Dr. David Friedman, Director-Dana Centre for Preventive Ophthalmology, Wilmer Eye Institute, Baltimore facilitated the session which was attended by 33 persons from all Aravind Glaucoma services, including consultants, managers, MLOPs and coordinators.

Retreat for the staff of Cataract clinics was held on December 6, 2017. Dr. Alan Crandall, Moran Eye Centre, University of Utah; Dr. R.D. Ravindran, Chairman, AECS and Dr. Haripriya Aravind, Chief, Cataract Services, Aravind-Chennai facilitated the discussions. Thirty one participants from various Aravind Cataract services attended the retreat and discussed the pre-operative, intra-operative and post-operative



Participants of Cataract Retreat with Dr. Alan Crandall at Aravind-Madurai

aspects of service delivery. Discussions on improving the effectiveness of training programmes, developing new materials and identifying research priorities for the future, were also held.

Towards Developing Mid Level Ophthalmic Personnel (MLOP)

MLOPs form a major part of Aravind's workforce and so, several programmes were initiated to enhance their performance. Rubrics method of evaluating their clinical skills is in progress. This will help ensure the quality of care offered. CMEs, clinical skill development sessions and several hands-on training programmes were arranged on various subjects to keep them updated on the latest developments. Proficient in the knowledge and skill in their area of expertise, several of the MLOPs now present papers at conferences.



Participants of Glaucoma Retreat with Dr. David Friedman



Ms. Muthulakshmi at the 4th World Congress of Paediatric Ophthalmology & Strabismus, Hyderabad



ESI medical camp at Aravind-Madurai

Employee Engagement Initiatives

Alignment with the mission and values is crucial to any organisation's success. Through Fetzer project, a team of researchers within and outside of Aravind put together the value system of Aravind. A series of workshops named 'The Aravind Way' was organised to share and validate Aravind's value system and also collectively find ways to strengthen it. Around 250 senior employees and leaders from across the system participated in 6 workshops conducted at Madurai, Pondicherry and Dindigul.

In times when healthcare is suffering from trust deficit, it is important to rekindle the basic human values of love, compassion and kindness alive. A 6-week Laddership course was piloted in collaboration with Service Space to help participants explore these values. A few of Aravind doctors also participated. There are plans to scale this programme for a larger pool.

Employee Welfare Initiatives

A get-together was organised for the families of vision centre technicians at Aravind-Tirunelveli on December 17, 2017 to motivate them to provide the necessary support to these staff. This gave an opportunity for the family members to understand and appreciate the service rendered to the community by these technicians. Special yoga and meditation sessions were organised for the senior MLOPs and administrative staff at Arivu Thirukovil, Aliyar. Close to 200 staff from different Aravind centres participated and have greatly benefitted.

In addition to the annual health check-up organised for the employees, HR department at Aravind-Madurai arranged a medical camp in association with Employees' State Insurance (ESI) in the hospital premises on March 16, 2018. Doctors from different specialities Gynaecology, Dentistry, ENT, Orthopaedics, Dermatology as well as Siddha, Homeopathy and

Get-together programme for vision centre staff at Aravind-Tirunelveli





Staff members at the sale organised by the residents at Aravind-Madurai

Ayurvedha were roped in which provided a unique opportunity for the employees to have their complete health check-up done under one roof. About 525 staff made use of this unique opportunity.

Financial support to the education of children were disbursed to about 250 employees across the centres.

Making a Difference

As part of the social responsibility programme, postgraduates in ophthalmology conducted an exhibition-cum-sale of products made by visually challenged women from the Rehabilitation Center for Blind Women, Trichy on January 10, 2018 at Aravind-Madurai. The programme witnessed extraordinary salesmanship by the residents who turned enterprising sales persons and helped in the sales of products worth over Rs.2 lakh.

The annual charity fest, Angaadi provided a unique shopping experience to the staff of Aravind-Madurai and Pondicherry. The amount collected through the sale of products was donated to charity organisations.

Angaadi at Aravind-Pondicherry



Auroutsav, Aravind-Coimbatore

Entertainment Activities

Auroutsav, the biennial art-sports- and literary competitions for the staff of Aravind Eye Care System was conducted over a period of two weeks. The programme saw widespread participation from various cadres of staff who were divided into 5 groups named after various regions of the country - Northern, Eastern, Western, Central and Southern India. The 30 odd competitions brought out the hidden talents among the staff and more significantly, camaraderie among the team members.

Kodaikondattam

Janakiamma Child Care Centre at Aravind-Madurai organised a summer camp for the children of employees. Fifty children in the age group of 7 to 13 participated in the well planned camp, which included treks, outbound learning sessions and several educational programmes.

Summer Camp for staff children at Aravind-Madurai



Information Technology and Systems

IT and systems play a major role in Aravind being celebrated as an effective eye care delivery model.

EMR Update

Continuous efforts were made to streamline the Electronic Medical Record (EMR) system to enhance performance, make it centralised to enable cloud implementation as well as integrate it with the Hospital Management System. EMR was implemented in three more Aravind centres including the one in Chennai. Currently, six tertiary and surgical centres and five community eye clinics are actively using the EMR. A tool is developed which shares the details of the patients referred between the centres, on demand.

In some of the comprehensive outreach camps, EMR is being tried out to help in documenting the findings and to track the patients referred to the base hospital. In these camps, the entire patient flow starting from registration to admission is managed with IT systems.

Technology Solutions

Zoho IT Services management tool: IT systems users can register complaints relating to hardware or software they use and track the solution provided by the IT team. IT team can request for feedback from the user after their service. This database of complaints and solution provided, will serve as a knowledge base to review the recurring complaints and plan permanent solutions as required.

Web Applications

A collaborative website - IRRA- Indian Retina Research Associates - was developed for research on Diabetic Retinopathy, a joint initiative by Aravind, LV Prasad Eye Institute and Sankara Netralaya.

AURODICTATE, a tool to convert voice to text and can be integrated in any application was developed. Parameter assessment for vision centres is now automated and merged with the Vision Centre Management System. This makes it easy to generate various reports required for managing the vision centres. This also helps in standardisation of systems across these centres for continuous improvement.

Aravind helped develop Better Operative Outcomes Software Tool for the project initiated by Dr. Nathan Congdon, Queen's University, Belfast, UK to measure cataract surgery outcomes. The team developed a website and windows PC application that will allow one to enter and view the data, including the one

synchronised from mobile application or windows PC application. The tool can also generate the necessary reports.

A central database of accounts for all Aravind centres was created to enable the management team to have a better control over the finances and to generate timely reports. Cloud based medical shop management solution 'Wondersoft' was implemented, again to exercise better control over the transactions and planning for purchases etc.

Aravind Diabetic Retinopathy Evaluation System, ADRES was upgraded with a module to grade ROP and this was implemented in Aravind-Tirunelveli. All the applications were upgraded for managing Goods and Service Tax introduced during the financial year. Necessary reports for submitting the tax returns are also made available.

Installations, Upgradations and Maintenance Works

- Requirements related to networking, EPABX, servers and client station computers for Aravind-Chennai were planned and implemented
 - Server in Aravind-Tirupur and Udumalpet was upgraded with Hyper-V and high availability clustering system. Storage for EMR was also installed.
- Initiatives are constantly being undertaken to handle the ever increasing large data needs, storage and to manage security related issues across all the hospitals.

IT Products and Services

Integrated Hospital Management System (IHMS) was implemented in nine hospitals in India and one in Bangladesh. Continuous support was provided to the various hospitals in India, Bangladesh, Ethiopia,

Mr. Ganesh Babu addressing at IHMS users' meet of LAICO's partner hospitals



Zambia, Nigeria and Kenya that have been already using IHMS. IT department arranged a meeting of the IHMS users of LAICO's partner hospitals (under Lavelle and SCALE projects) in November 2017. The meeting aimed to help the users improve the utilisation of IHMS, generate necessary information for managing operations, planning and decision making as well as to ensure quality of data. Aravind team also participated in a similar workshop organised by Seva Foundation in Nepal for the partner hospitals of Nepal Netra Jyoti Sangh on December 20, 2017.

Vision Centre Management System was implemented in eight centres run by hospitals in Bangladesh and India.

Aravind Teleophthalmology Network

During the year, nearly 575,000 cases were handled through tele-consultation across the various vision centres. Apart from this, Aravind works with diabetes centres in the screening of diabetics through tele-consultation with the help of Aravind Diabetic Retinopathy Evaluation Software (ADRES). In the year ending March 2018, a total of 2,500 cases were evaluated using ADRES.

Teleophthalmology platform is used for several educational interactions and around 530 video conferencing sessions were held in this regard.

Aravind Library and Information Centre (ALICE)

Aravind libraries continued to implement new technology to share information. Library webpage on the intranet was revamped with user-friendly features. EYEZNEWZ, the e-newsletter of the library published every month became a weekly since August 2017.



Quiz programme conducted during Library Week Celebration, Aravind-Madurai

In commemoration of Dr. V's birth centenary, ALICE observed Library Week from March 12-17, 2018. It was a unique programme where, for the first time, all the libraries of Aravind Eye Care System together formed one hand, one force, with the sole aim of reaching out, imparting teaching, learning and spreading knowledge to all. During the week, several programmes and competitions were conducted for the users. Winners of the competitions were honoured with trophies and certificates at the valedictory function.

Aravind Communications

The department continued its efforts to standardise patient education / information materials. The team visited several Aravind centres, took stock of the requirements and helped develop new materials as well as improve the existing ones. The department also extended its support by facilitating stationary requirements for various CMEs conducted across Aravind commemorating Dr. V's birth centenary.

Aravind Communications team during its visit to Srinivasa Fine Arts, Sivakasi



RECOGNITIONS AND ACHIEVEMENTS

Aravind makes its presence felt in ophthalmic community, with several of its doctors receiving prestigious awards at various national and international fora.

RECOGNITIONS

Make in India Emerging Entrepreneurs Award

New Delhi, July 6, 2017

Aravind Eye Care System won India Today's Award in the Social Entrepreneurship category and Dr. S.R. Krishnadas, Director, HR, Aravind Eye Care System received the same from Shri. Jeyant Sinha, Minister of State for Civil Aviation, Govt. of India.

Business Star Award

Chennai, December 22, 2017

Dr. P. Namperumalsamy, Chairman Emeritus, Aravind Eye Care System was honoured with Naanayam Vikatan's Award under the category 'Social Consciousness'.

Pearl Foundation's Lifetime Achievement Award

Chennai, December 10, 2017

Pearl Foundation honoured Dr. P. Namperumalsamy with the Lifetime Achievement Award in recognition of his outstanding contributions and achievements in the field of medical science.

Dr. P. Namperumalsamy Honoured at the Hindu - Guardians of Healthcare Programme

Chennai, March 16, 2018

Dr. P. Namperumalsamy was honored by The Hindu Group Publishing Private Ltd; at a programme organised to highlight the exemplary work done by healthcare professionals in Tamil Nadu. Dr. Karthik Srinivasan received the award on behalf of Dr. Namperumalsamy.

iFocus Lifetime Achievement Award

New Delhi, January 21-28, 2018

Dr. G. Natchiar, Director Emeritus, Aravind Eye Care System received the award at iFocus- the National Postgraduate Education Programme organised by Centre for Sight in New Delhi. The award recognised her efforts in guiding and mentoring hundreds of ophthalmology residents and fellows, leadership in creating policy and programmes promoting high-quality and volume-intensive community-based eye care, building skilled human resources to support the growth

trajectory, and being a role model through her clinical, administrative and academic achievements.

Pioneer in Ophthalmology Award

Chennai, December 1-2, 2017

International Society of Manual Small Incision Cataract Surgeons (MSICS) honoured Dr. G. Natchiar with the award recognising the inspiration she has provided to the ophthalmic community, at the 2nd World Conference on MSICS - Comprehensive Cataract Conference.

ISCKRS Lifetime Achievement Award

New Delhi, August 5-7, 2017

Dr. M. Srinivasan, Director Emeritus, Aravind Eye Care System received the award at the Annual Conference of Indian Society for Cornea and Keratorefractive Surgeons (ISCKRS) held in New Delhi. Dr. Harsh Vardhan, Minister of Science and Technology, Govt. of India presented the award.

Dr. U. V. Raman Raju Lecture

Vijayawada, October 13-15, 2017

Dr. M. Srinivasan delivered the Dr. U.V. Raman Raju Lecture on the topic, *Corneal blindness and prevention of corneal ulcer* at the 3rd Annual Conference of the Andhra Pradesh Ophthalmic Society.

DOS-SPOSI Lifetime Achievement Award

New Delhi, December 9-10 2017

Dr. P. Vijayalakshmi, Professor, Paediatric Ophthalmology and Adult Strabismus Services, Aravind-Madurai received the award and gold medal during the Joint Congress of Delhi Ophthalmological Society (DOS) and Strabismus and Paediatric Ophthalmological Society (SPOSI) of India conference.

Dr. KTK Lifetime Achievement Award

Chennai, May 10, 2017

Rotary Club of Chennai - IT City presented the award to Dr. R.D. Ravindran, Chairman, Aravind Eye Care System. The award recognised his services to the medical world and his attribute of giving back multifold to society for the betterment of mankind in general and for their healthy living in particular.

Prof. N.K. Mehra Memorial Oration

Lucknow, March 27, 2018

Dr. P. Vijayalakshmi delivered the oration on the topic,

Entangled! Brain and the Eye at King George's Medical University at Lucknow.

Felicitation at the Salute to Mothers Event

Chennai, January 25, 2018

Mrs. Lalitha Srinivasan, Member-GOVEL Trust was felicitated at the Salute to Mothers event organised by Sri Krishna Sweets. She was honoured for her contribution as a mother in the achievements of Dr. Aravind, Chief Medical Officer, Aravind-Chennai.

Tamil Nadu Scientist Award (TANSA)

Chennai, September 25, 2017

- Dr. P. Sundaresan, Senior Scientist, Aravind Medical Research Foundation (AMRF) was presented with the TANSA Award for the year 2013 by the Tamil Nadu State Council for Science and Technology. Mr. K.P. Anbalagan, Minister for Higher Education, Govt. of Tamil Nadu presented the award at the function held at Anna University in Chennai.

Recognitions for Dr. S.R. Rathinam

Dr. S.R. Rathinam, Chief, Uveitis Services, Aravind-Madurai delivered the C S Bhaskaran Endowment Oration titled, Bench to Bedside: My Journey in Uveitis at L V Prasad Eye Institute (LVPEI), Bhubaneswar on July 3, 2017.

Dr. Rathinam was invited to deliver the Robert A. Nozik lecture on the topic, Multinational Collaborations in Uveitis at University of California, San Francisco (UCSF).

She was also recognised as visiting faculty to UCSF and LVPEI.

Dr. Rathinam was recognised as Selection Committee Member for the prestigious Shanti Swarup Bhatnagar Prize advisory committee. She was nominated as Associate Editor in the Journal of Ocular Immunology and Inflammation.

Asia-Pacific Academy of Ophthalmology (APAO) Achievement Award

Hong Kong, February 8-11, 2018

Dr. R. Kim, Chief Medical Officer and Chief-Retina and Vitreous Services, Aravind-Madurai received the Achievement Award at the 33rd APAO Congress.

Honorary Doctorate

Guntur, Andhra Pradesh, July 31, 2017

Vignan University, Vaddamudi, Guntur conferred Honorary Doctorate on Dr. Kalpana Narendran, Chief, Paediatric Ophthalmology and Adult Strabismus Department, Aravind-Coimbatore for her professionalism and commitment.

Qimpro Award for Dr. S. Aravind

Mumbai, November 16, 2017

Dr. S. Aravind was awarded the Qimpro Award in the category, *Role Model Leader for World-Class Quality* in the field of Healthcare.

IAPB Eye Health Hero Award

Kathmandu, Nepal, September 18, 2017

Mr. R. Meenakshi Sundaram, Senior Manager, Outreach, Aravind Eye Care System was honoured with *Eye Health Hero Award* by the International Agency for the Prevention of blindness (IAPB). The award recognises and celebrates frontline staff whose work in the field and engagement with the community makes a real difference in restoring sight.

Padmashree Dr. M.M. Joshi Oration

Hubli, April 22, 2017

Dr. Haripriya, Chief, Cataract and IOL Services, Aravind-Chennai delivered the Oration on the topic, *Intracameral Antibiotic Prophylaxis- The Aravind experience* at Dr. M.M. Joshi Eye Institute, Hubli.

Aurofarm gets Certified as Organic Farm

Aurofarm which houses the Aurolab facility was certified as "Organic" by the Tamil Nadu Organic Certification Department in accordance to the requirements of India's National Programme for Organic Production Standards.

Vocational Service Award

Tirunelveli, October 22, 2017

Dr. V. Anitha, Chief, Cornea Services, Aravind-Tirunelveli received Vocational Service Award by the Rotary Club of Kovilpatti for her selfless work and service.

Fifth Asia Pacific HIMSS-Elsevier Digital Healthcare Award 2017

Singapore, September 11-14, 2017

Aravind Eye Hospital, Pondicherry won the award in the category, *Outstanding ICT Innovation* for its fundus on phone for rural eye care.

Certificates of Appreciation

Tirunelveli, July 22, 2017

Senior nurses of Aravind-Tirunelveli -

Ms. M.N. Chidambaram, Nursing Superintendent;
Ms. V. Arumugam, Deputy Nursing Superintendent;
Ms. K.S. Marimuthu, Co-ordinator-Retina Clinic;
Ms. R. Muthulakshmi, Technician Supervisor;



Dr. R. Venkatasamy presenting the Dr. KTK Lifetime Achievement Award to Dr. R.D. Ravindran



Naanayam Vikatan's Business Star Award for Dr. P. Namperumalsamy



ISCKRS Lifetime Achievement Award for Dr. M. Srinivasan



Dr. S.R. Krishnadas receiving the Make in India Emerging Entrepreneurs Award from Shri. Jeyant Sinha, Minister of State for Civil Aviation, Govt. of India



Mrs. Lalitha Srinivasan and Dr. S. Aravind at the 'Salute to Mothers' event



Dr. M. Srinivasan delivers the Dr. U.V. Raman Raju Lecture at APOS conference





Dr. P. Sundaresan receiving the TANS Award from Mr. K.P. Anbalagan, Minister for Higher Education, Govt. of Tamil Nadu



Fifth Asia Pacific HIMSS-Elsevier Digital Healthcare Award 2017 for Aravind-Pondicherry



Dr. Kalpana Narendran after being conferred with the Honorary Doctorate by Vignan University



Dr. R. Kim receives the APAO Achievement Award



Dr. Karthik Srinivasan receives the Hindu - Doyens award on behalf of Dr. Namperumalsamy from Shri. Gopalkrishna Gandhi



Dr. GN Rao felicitating Dr. S.R. Rathinam after delivering the C.S. Bhaskaran Endowment Lecture



Dr. S.R. Rathinam with the Proctor Foundation team after delivering the Robert A Nozik Lecture



Mr. R. Meenakshi Sundaram receiving the IAPB Eye Health Hero Award



Qimpro Award for Dr. S. Aravind



Dr. Haripriya Aravind being felicitated after delivering the Padmashree Dr. M.M. Joshi Oration

Ms. M.K. Sankara Gomathi, Co-ordinator- Glaucoma Clinic; Ms. M.M Nambi, Counsellor; Ms. D.A. Stella Baby, Tutor - OP were awarded Certificate of Appreciation for their selfless and efficient work by the Lions Club of Tirunelveli Cosmos.

ACHIEVEMENTS

- Dr. R. Venkatesh, Chief Medical Officer, Aravind-Pondicherry, for the third consecutive year, won the Best Video Award for the video titled *Periscreeener – Smartphone based virtual reality device for Perimetry* at the Annual Conference of Glaucoma Society of India, Jaipur, September 15-17, 2017.
- Dr. R. Venkatesh and Dr. John Davis Akkara, Fellow, Glaucoma Services, Aravind-Pondicherry - Best Video Award in Special Interest category: *The Oscar dream: Low cost, high definition surgical video recorder* at the Indian Intraocular Implant & Refractive Surgery Convention (IIRSI), Chennai, July 8-9, 2017
- Dr. Jayant Kumar and Dr. Naresh Babu, Medical Consultants, Retina and Vitreous Services, Aravind-Madurai - Best Video Award at Retina Summit organised by Sankara Nethralaya, Chennai, July 14-15, 2017
- Dr. Haripriya Aravind, Best Paper of the session - *Endophthalmitis reduction with intracameral moxifloxacin prophylaxis - Analysis of 1 million surgeries* at the Annual Conference of American Academy of Ophthalmology held at New Orleans, USA, November 10-14, 2017. The same study made her one of the top three finalists of 462 entries in the category- Research paper of the year at the British Medical Journal awards held in New Delhi on November 17 and 18, 2017.
- Dr. Prasanth Gireesh, Medical Consultant - Cataract and IOL Services, Aravind-Pondicherry - Film Festival Award in the category, *New Producer / Young Physician - Extra-ocular needle guided Haptic insertion technique for scleral fixation* at the Annual Meeting

of American Society of Cataract and Refractive Surgeons (ASCRS) Film Festival Award, Los Angeles, USA, May 5-9, 2017.

- Dr. S. Kavitha, Senior Glaucoma Consultant, Aravind-Pondicherry, Best Paper Award-*Shared medical appointments for glaucoma care provision at a tertiary care eye hospital-A randomized trial* at Sangam Glaucoma Conference organised by Sankara Nethralaya, Chennai on September 2, 2017.
- Dr. Sapan Shah, Fellow, Orbit, Oculoplasty and Ocular Oncology Services, Aravind-Madurai, Best Free Paper Award - *A Case series of Orbital Rhabdomyosarcoma* at the Annual Conference of Oculoplastic Association of India, Madurai, October 27-29, 2017
- Dr. Pratyusha Ganne, Retina Fellow, Aravind-Pondicherry, Best Video Award - *For RETILAPP: Retinal laser and photography practice eye model: A Cost effective innovation in simulation* at the Annual Conference of VRSI held in Bhubaneswar, November 30-December 3, 2017
- Dr. Lakshey Dudeja, Medical Consultant, Cornea and Refractive Surgery, Aravind-Salem, Best Ophthalmic Photography award at the Delhi Ophthalmological Society (DOS) Annual Conference, New Delhi, April 7-9, 2017
- Dr. Joseph Gubert, Microbiologist, Aravind-Pondicherry, Best Poster Award for the poster titled, *Clinical and diagnostic aspects of fungal infections* at the National Workshop on Clinical and Diagnostic Aspects of Fungal Infection organised by Pondicherry Institute of Medical Science and American Society for Microbiology in Pondicherry on May 11, 2017.

At the Annual Conference of Indian Eye Research Group

Madurai, July 29-30, 2017

- Mr. Mohd Hussain Shah, Research Scholar, Department of Molecular Genetics, Best Poster

Dr. Haripriya Aravind receiving the AAO Best Paper Award



Dr. Joseph Gubert receiving the Best Poster Award



Award for the poster titled, *Identification and characterization of variants and a novel 4bp deletion in the regulatory region of SIX6, a risk factor for Primary Open Angle Glaucoma.*

- Mr. S. Ashwin Balaji, Junior Research Fellow, Department of Ocular Pharmacology, Best Oral Presentation Award for his presentation, *Effect of cyclic IOP on outflow facility and activation of Rho A / ROCK signal cascade in human eyes.*

At the Annual Conference of Tamil Nadu Ophthalmic Association (TNOA)

Erode, August 5-7, 2017

- Dr. R. Venkatesh and team won the Ophthalmic Premier League
- Dr. Shivakumar Chandrasekharan, Chief - Cataract and IOL Services, Aravind-Tirunelveli, Best Free Paper Award - *'Is it time to revisit our perioperative prophylaxis for cataract surgery?*
- Dr. V. Arjun, Cornea Fellow, Aravind-Coimbatore, Prof. C.P. Gupta Best Paper Award - *Piggyback surgery in nanophthalmos*
- Dr. Seema Ramakrishnan, Consultant, Cornea Services, Aravind-Pondicherry - Second prize in *Just a Minute session.*
- Dr. Sahithya.B, Medical Officer, Paediatric Ophthalmology and Adult Strabismus Services, Aravind-Madurai, Best Paper Award - *Cognitive visual dysfunction in children with Autism spectrum disorders.*
- Dr. Uma, MS Resident, Aravind-Madurai, Best Poster Award - *Heavy eye syndrome: A cause of acquired strabismus*
- Dr. Josephine Shyamala, Senior DNB Resident, Aravind-Pondicherry, Best of Best Paper Award - *A study on conjunctival flora in nasolacrimal duct obstruction and its changes after DCR surgery.*
- Dr. A. Balraj and Dr. Savithri. P, DNB Residents, Aravind-Pondicherry - Second runner up in quiz.

At the Andhra Pradesh Ophthalmic Society Conference

Vijayawada, October 13-15, 2017

- Dr. Ramya Seetam Raju, Fellow, Cornea Services, Aravind-Madurai, Best Paper Award for the paper titled, *Microbiological profile of donor corneoscleral rims at keratoplasty*
- Dr. Hasika Ravula, Fellow, Cornea Services, Aravind-Madurai, Second Best Paper prize - in Prof Vengat Rao competitive paper session for the paper, *Pythium insidiosum- causative agent of microbial keratitis*

At the Comprehensive Cataract Conference

Chennai, December 1-2, 2017

- Dr. R. Venkatesh, and team, Best Video Award for the video, *Systems to reduce surgical complications and the*

Best Entertainer Award at the Ophthalmic Premier League.

- Dr. Prabhu Baskaran, Medical Consultant, Aravind-Pondicherry, Best Innovation Video for the video, *Simple silicone stopper for SFIOL.*
- Dr. Sanjeev Srinivas, Primary DNB Resident, Aravind-Salem, Best Paper Award for the paper, *Drug-induced Bilateral angle closure following cataract surgery with complete reversal following drug withdrawal.*
- Dr. K. Karthikeyan, General Ophthalmology, Aravind-Salem, Second Best Paper Award for the paper, *Visual outcome in scleral fixation of posterior chamber intra ocular lens with inadequate capsular support in complicated manual small incision cataract surgery.*
- Dr. Seema Ramakrishnan, Medical Consultant, Aravind-Pondicherry, Best Paper Award for the paper titled, *Outcomes of Air Descemetopexy in post cataract surgery DMD*

At Keracon 2017

Hyderabad, December 15-17, 2017

- Dr. Prajapati Kishan Anil Kumar, Fellow, Cornea Services, Aravind-Madurai, Best Video Award for the video, *C3R without use of UV- A irradiation.*
- Dr. Ashish Kumar and Dr. Lumbini Devi, Cornea Consultants of Aravind-Madurai, First and Second prize respectively in the Clinical Photography session.

Awards at All India Ophthalmic Conference

Coimbatore, February 22-25, 2018

- Ms. Kumaragurupari, Senior Librarian, Best of IJO Papers 2017 - *Publication rates from the All India Ophthalmic Conference 2010 compared to 2000: Are we improving?*
- Dr. D. Chandrasekhar, Medical Consultant, General Ophthalmology, Aravind-Coimbatore, Best Poster Award in Inflammation category - *Continuous microbiological surveillance in OTs – An Insight.*
- Dr. S. Kavitha, Consultant, Glaucoma Services, Aravind-Pondicherry, Best Poster Award for the poster, *Shared medical appointments in glaucoma management at a tertiary eye hospital randomized trial*
- Dr. Ashish Khodifad, Fellow, Retina Services, Aravind-Pondicherry, Best Paper Award, *Diabetic macular edema or masquerade?.* He also won consolation prize in quiz.
- Dr. Pavan Kumar, Fellow Glaucoma Services, Aravind-Pondicherry, Runner up for the PG Thesis award.
- Dr. John Davis Akkara, Fellow, Glaucoma Services, Aravind-Pondicherry, Best Poster in Comprehensive Ophthalmology and Second Prize in Think Under the Apple Tree programme.

ARAVIND EYE FOUNDATION

Aravind Eye Foundation continues to support Dr. G. Venkataswamy's mission "To Eliminate Needless Blindness" through a combination of philanthropy, volunteerism, and partnering. Foundation board members come from a wide variety of fields, including clinical care, medical research, technology and new product development, venture capital, and healthcare management. Since Aravind's core patient services are internally funded, the foundation prioritizes areas where outside support can help scale existing programs or stimulate new research and service development.

Ring of Hope (ROH)

Retinoblastoma is a blinding, often fatal, form of eye cancer, primarily affecting children between 0 and 5 years of age. Aravind Eye Hospital sees more cases of retinoblastoma than any hospital in the world, and the expensive and prolonged treatment cycle is more than most Indian families can afford.

Founded in 2004, Aravind's Ring of Hope program provides diagnosis, surgery, chemotherapy, radiation, family counselling, prostheses, and genetic testing to determine whether siblings or offspring may develop the disease. This year, Aravind Eye Hospital, Madurai treated 39 new patients and provided 666 follow-up visits, bringing the number of patients supported to 487 and patient visits to 6,525. Two hundred and eighty-six children have received custom-made prostheses, which are replaced as they grow. In the coming years, Aravind plans to extend this program to all its hospitals.

Five-year-old Prakasan is typical of Aravind's young patients. He first came to Aravind when he was one and a half years old and was diagnosed with unilateral retinoblastoma. The family lives in Nilakkotai, about 50kms from Madurai. Prakasan's family are refugees from Sri Lanka, and their background puts them in unpredictable living conditions and isolates them from the community. The father earns a living through construction and painting, which is just sufficient to support the family. Prakasan's mother, who has little exposure to the outside world, fainted on hearing that her son was affected with eye cancer. The cost of



Vision screening at Sivananda Vidyalayam Matriculation School, Aruppukottai

treatment was too much for the family on their own, but thanks to Ring of Hope, the family was able to go ahead with the treatment. Prakasan is now in follow-up with a good prognosis for recovery.

We are grateful to the Madison Community Foundation, Jaya G. Iyer Endowment Fund, the Umberto Romano and Clorinda Romano Foundation, the Sohum Foundation, the Diaz Family Foundation, and the many individuals who support the patients and their families.

Spectacles for Scholars

Poor eyesight adversely impacts a child's ability to learn, since 80% of learning happens visually. Around the world, an estimated 12 million children have visual impairments that can be corrected with a pair of spectacles. Aravind's Spectacles for Scholars program addresses this problem with free vision screening and eye glasses to school children. Aravind's unique screening method, which uses classroom teachers to identify kids with vision problems, was featured on the front page of the New York Times.

Through a partnership with Warby Parker, the retail and online eyewear company, Aravind screened 240,000 school children and distributed 8500 pairs of spectacles this year.

Rural Vision Centres

Rural vision centers are the cornerstone of Aravind's goal of universal eye care by 2020. Each center serves a population of 50,000 to 70,000 and is connected to one



Tele-consultation in progress at a rural vision centre



Dr. Sherin Haroon during her training at Eye Care Centre, Vancouver General Hospital, Canada

of Aravind's tertiary hospitals by tele-ophthalmology. Aravind Eye Foundation provides the seed capital for set-up and the first year's operating costs; most centers break-even by year two.

This year, Aravind Eye Foundation established three new centers, funded by individual donors, in Kamuthi, Puliyangudi, Valavanur belonging to Madurai, Tirunelveli, and Pondicherry districts respectively. Aravind's network of vision centres now has 66 center of which 15 are supported by AEF. The centers funded by the Foundation served more than 100,000 patients and prescribed 14,000 eye glasses.

Physician Training

Continuing medical education is crucial for Aravind doctors, who are at the forefront of global policy-making and training the next generation of eye care personnel in the developing world. Aravind has benefitted greatly from the generosity of the Allene Reuss Memorial Trust, which provides travel grants to Aravind physicians to train with preeminent ophthalmologists at leading eye hospitals in the world.

The impact goes beyond the development of individual doctors. They bring that learning back to the

Aravind Eye Care System, where it informs research, patient care, and product development. Their influence is further extended by Aravind's healthcare consulting group, which works with 300+ hospitals across the developing world.

Innovation and New Programs

Innovation at Aravind is driven by mission - how can Aravind serve more patients and achieve Dr. V's vision of a world without needless blindness? This March, Aravind Eye Hospital-Pondicherry opened an innovation lab that will enable all personnel to explore new ways of addressing blindness and low vision.

Aravind Eye Foundation also helped establish the first ROP treatment center in India at Aravind Eye Hospital - Theni, under the direction of chairman Emeritus, Dr. P. Namperumalsamy. Retinopathy of Prematurity (ROP) is a major cause for blindness in premature infants. With improving neonatal care leading to a better survival rate of premature infants, ROP is fast emerging as a common preventable cause of vision impairment in India.

*"Intelligence and capability are not enough.
There must be the joy of doing something beautiful."
(From the journals of Dr. G. Venkataswamy)*

Aravind Eye Foundation is deeply grateful to the many supporters and friends who participate in the joy of Aravind's vision.



PARTNERS IN SERVICE

Aravind's core activities are funded internally. The organisation also enjoys the support of philanthropists and institutes keen to contribute to its mission of eliminating needless blindness. Aravind gratefully acknowledges their support, without which the organisation would not have been in the position where it is now.

For service delivery, training and more

- Acumen, USA
- Alcon Laboratories Inc, USA
- Canadian International Development Agency (CIDA), Canada
- Carl Zeiss Meditec, Germany
- CBM International, Germany
- Centre for Innovation in Public Systems, Hyderabad, India
- Combat Blindness Foundation, USA
- Conrad N. Hilton Foundation, USA
- Dana Center, Johns Hopkins University, USA
- Essilor, India
- Fred Hollows Foundation, Australia
- T. H. Chan School of Public Health, Harvard University, USA
- Indian Institute of Management, Bengaluru, India
- Indian Overseas Bank, India
- International Agency for Prevention of Blindness, UK
- International Council for Ophthalmology, UK
- Kaushal Devendra Gupta, Pune, India
- Lavelle Fund for the Blind, USA
- Lions Clubs International Foundation, USA
- London School of Hygiene & Tropical Medicine, UK
- Manohar Devadoss, Chennai, India
- Narotam Sekhsaria Foundation, Mumbai
- ORBIS International, USA
- Rotary International, USA
- Schwab Foundation and Social Entrepreneurship, Switzerland
- Seva Foundation, USA
- Seva Service Society, Canada
- Shyam Prakash Gupta, Madurai, India
- SightLife, USA
- SightSavers, UK
- State Bank of India, India
- Standard Chartered Bank & Scope Intl., UK
- So-Hum Foundation, USA
- Subroto Bagchi, Odisha, India
- The Queen Elizabeth Diamond Jubilee Trust, UK
- Tirumala Tirupati Devasthanams, India
- TOMS, USA
- Topcon, Japan
- University of British Columbia, Vancouver, Canada
- University of California, Berkeley, USA
- University of Michigan, USA
- University of Pennsylvania, USA
- USAID, USA
- VISION 2020 - The Right to Sight, India
- Wescott Williams Ltd., UK
- World Diabetes Foundation, Denmark
- World Health Organization, Switzerland
- XOVA: Excellence in Ophthalmology Vision Award, USA

For research

- Alagappa University, Karaikudi, India
- Amrita School of Engineering, Coimbatore, India
- Aravind Eye Foundation, USA
- Council of Scientific and Industrial Research, New Delhi, India
- Cornell University, Ithaca, NY, USA
- Department of Biotechnology, New Delhi, India
- Department of Science and Technology, New Delhi, India
- Department of Health Research, New Delhi, India
- Geisel School of Medicine at Dartmouth, Dartmouth Hitchcock Medical Center, Lebanon NH, USA
- India Alliance, Hyderabad, India
- Indian Council of Medical Research, New Delhi, India
- Istanbul University, Istanbul, Turkey
- JIPMER, Pondicherry, India
- John Hopkins University, USA
- KALPAH Innovations Pvt. Ltd., Vizag, India
- Kalasalingam University, Krishnan Koil, India
- Kellogg Eye Center, University of Michigan, USA
- London Business School, UK
- Madurai Kamaraj University, Madurai, India
- Michigan State University, USA
- MIND TREE, Bangalore, India
- Moorfields Eye Hospital, London
- National University of Singapore, Singapore
- National Eye Institute, USA
- Neuroptics Research Laboratory, Berkeley, USA
- Postgraduate Institute of Medical Education and Research, Chandigarh, India
- Proctor Foundation, University of California, San Francisco F.I., USA
- Sastra University, Thanjavur, India
- Singapore Eye Research Institute/ Singapore National Eye Centre, Singapore
- Singapore National Eye Centre, Singapore
- Sichuan Academy of Medical Sciences & Sichuan provincial peoples Hospital, Sichuan, China
- Science and Engineering Research Board, New Delhi, India
- Unite des Aspergillus, Institut Pasteur, Paris
- University of California, Berkeley, USA
- University of Illinois, Chicago, USA
- University of Pennsylvania and Children's Hospital of Philadelphia, USA
- University of Maryland, USA
- University of Birmingham Medical School, UK
- University of Liverpool, Liverpool, UK
- University of Ulster, Northern Island, UK
- Vision Research Foundation, Sankara Nethralaya, Chennai, India
- Wellcome Trust, UK
- Wills Eye Hospital, Philadelphia, USA
- World Health Organization, Switzerland

ARAVIND EYE CARE SYSTEM

Chairman &

Director-Quality

DR. R.D. RAVINDRAN, MS, DO

Chairman Emeritus &

Director-Research

DR. P. NAMPERUMALSAMY, MS, FAMS

Directors Emeritus

DR. G. NATCHIAR, MS, DO

DR. M. SRINIVASAN, MS, DO

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FRCOPHTH

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DR. USHA KIM, DO, DNB

Academic Consultant

PROF. J. DANRITA

Manager-Instructional Design

HEPSIBHA JAWAHAR, MA

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Director

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Senior Manager

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Senior Network Administrator

S.J. RAJAN, MCA

Manager-Web Applications

S. SANTHA SUBBULAKSHMI, MCA, MBA,
M.LL.Sc

Manager

R. MALA, MCA

ARAVIND COMMUNICATIONS

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- DINDIGUL** - 31A, New Agraharam, Palani Road, Dindigul 624 001, Tamil Nadu, India. Phone: (0451) 244 8100
- TUTICORIN** - Meenakshipuram West, Near Old Bus Stand, Tuticorin 628 002, Tamil Nadu, India. Phone: (0461) 230 0410
- UDUMALPET** - 112, Dhalli Road, Opp. Palaniandavar Mills, Udumalpet 642 126, Tamil Nadu, India. Phone: (04252) 260 400
- COIMBATORE CITY CENTRE** - Cowly Brown Road, R.S. Puram, Coimbatore 641 002, Tamil Nadu, India. Phone: (0422) 254 0400

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72, Kuruvikaran Salai, Gandhinagar, Madurai 625 020, Tamil Nadu, India. Phone: (0452) 435 6500

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Avinashi Road, Coimbatore 641 014, Tamil Nadu, India. Phone: (0422) 436 0400

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1, Sivagangai Road, Veerapanjan, Madurai 625 020, Tamil Nadu, India. Phone: (0452) 244 6100



World Health Organization
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Dr. V planting the banyan tree at Aurofarm on March 21, 2005



'Boiling the milk' ceremony of Aravind-Madurai on Sep 15, 1978



Dr. V during one of his visits to the US



Dr. V with Sir John and Lady Wilson and Dr. Kabir at the Nutrition Rehabilitation Centre, 1971



Dr. V at Govt. Erskine Hospital, Madurai



Dr. V with his team getting ready for a camp



In the Indian Army Medical Corps during 1946-48