Breakthrough

BRINGING IDEAS TO LIFE

Vision Centres – Opening our eyes to Eye Care

Dr Namperumalsamy

D r Namperumalsamy P, Chairman, Aravind Eye Hospitals thinks big. "Our mission is to eliminate needless blindness in the world and we have the largest and most productive eye care facility in the world," he says.

With such vision Aravind Eye Care has established its community based outreach initiatives. Studies conducted at Aravind showed that only 7% of the population needing eye care, accessed eye care even through short term screening eye camps. While eye camps are an effective means to reach out to the community and provide eye care, they are not effective in inculcating pro-active health seeking behaviour in people.

"We immediately identified the strong need for developing permanent primary eye care services, especially in the rural areas to ensure easy access," says Dr Namperumalsamy. With this aim, Aravind Eye Hospital blended information technology innovatively into "Vision Centres" – a Primary Eye Care Centre facilitating online consultation.

The vision centres allow every single patient to consult the ophthalmologist at the secondary hospital or tertiary hospital through online tele-consultation.

This online approach helps rural patients acquire the right treatment advice directly from ophthalmologists, assisted by appropriate diagnosis by the vision centre's technicians.

Shifts in demographics are leading to an increase in blinding eye problems like diabetic retinopathy, age related macular degeneration and glaucoma. These conditions assume greater significance according to the nature of the disease—leading to irreversible loss of vision, further aggravated by a lack of awareness in the community and medical fraternity, lack of accessibility, and inadequate availability

Category of Innovation	:	Social Entrepreneurship
Area of Innovation	:	Health care
Name of the Innovator	:	Dr Namperumalsamy P
Name of the Organisation	:	Aravind Eye Hospital
Place	:	Madurai
Commercialised	:	Yes
What is the Innovation	:	Vision Centres – Primary Eye Care Centre using tele-ophthalmology with high bandwidth connectivity.

of trained ophthalmologists to tackle these issues.

This requires a different approach, such as setting up Vision Centres—a rural outpatient screening centre providing comprehensive primary eye care services run by a well trained paramedic staff (Mid Level Ophthalmic Personnel) and a counsellor.

"The main aim of these Vision Centres is to deepen the penetration of eye care services in the community they serve which houses a population of roughly

Patients can be remotely diagnosed by doctors via high-speed wireless videoconferencing and get prescription glasses, eye drops and blood tests. They are referred to an Aravind hospital if surgery is needed, and receive post-operative care.

When a patient comes to the Vision Centre, once the registration is complete, the Vision Centre technician performs a basic health assessment including height, weight and blood pressure measurement. Following this, the technician proceeds to the eye

> "Aravind Eye Care System is the most productive eye care facility in terms of surgical volume and the number of patients treated."

50,000 people. Several awareness innovations have been adopted by Aravind in this approach."

These "Vision Centres" aim to provide a model of "primary eye care" in the remote, underserved geographical areas of developing countries in a focused manner and address the major challenges of eye care, accessibility and affordability.

examination. As appropriate, dilation, refraction and slit lamp examination are performed before consulting with the ophthalmologist.

In 'suspected patient' cases, fundus images are also taken and shown to the ophthalmologist. In addition to this, abnormalities in the anterior segment are also captured and shown to the ophthalmologist.
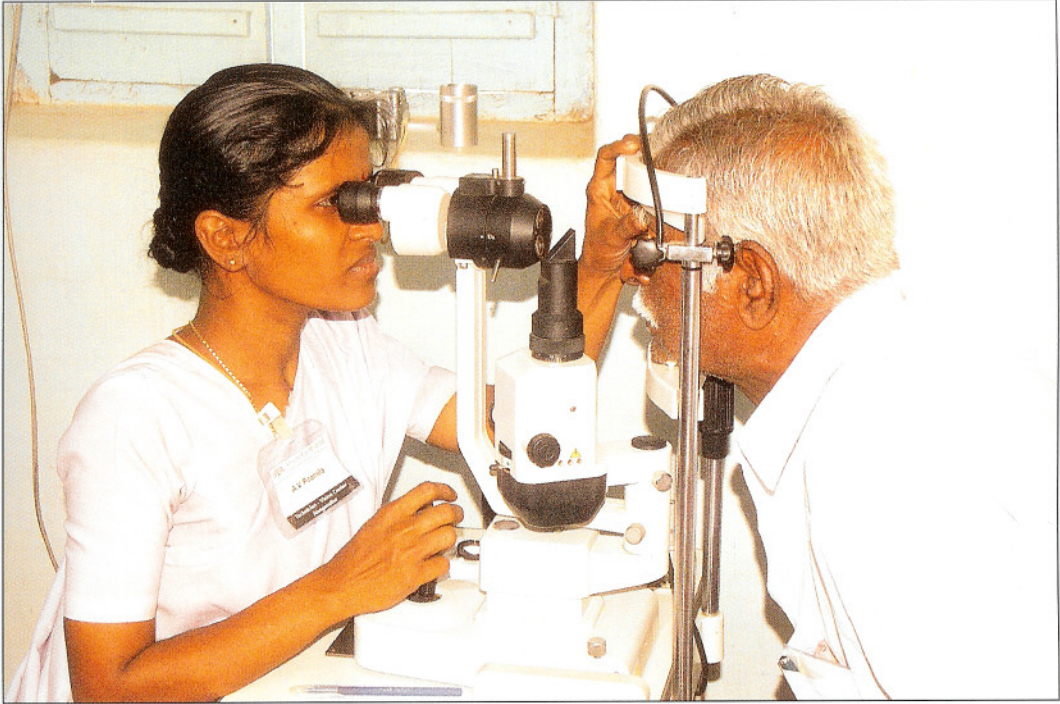
Paramedic staff examining a patent at a Vision Centre

"The Vision Centres, serving as permanent outreach facilities for the hospital, are connected with the rural secondary eye hospitals using tele-ophthalmology with high bandwidth connectivity, ensuring the quality of eye care services offered to patients," says Dr Namperumalsamy.

To connect the vision centres to Aravind hospitals, the team from the Intel Research Berkeley Lab at the University of California used a high bandwidth connection and a licence free frequency based on "Wi-Fi" technology. The efficiency of this technology was enhanced with better algorithms to reach a distances of 50 miles when compared to the usual coverage of 200 ft radius.

Innovating using the Digital Camera / Remote Connection

A regular digital camera, attached to the slit lamp's eye piece using an adapter ring (developed at Aravind), is used to capture the images. A simple, removable stand that can hold a 78 D lens (to view the posterior segment of the eye – retina) is also mounted to the slit lamp frame. This arrangement allows for the capture of retinal fundus images of the suspected patients.

An opthalmologist in consultation through video conference

To a certain extent, these images also allow measurement of disc cupping to understand glaucoma related eye problems. Thus this imaging would help in identifying patients affected by diabetic retinopathy or glaucoma at a very early stage.

"Detecting these conditions at an early stage is very crucial to avoid permanent vision loss," says Dr Namperumalsamy. "Our Vision Centre technicians have all been given extensive training to master the art of capturing images using the digital camera."

The Marratech software used for the tele-consultation collaboration is built conforming to audio and video standards to ensure smooth video and audio transmission, along with data. This software is based on a spoke and hub model where all the Vision Centres can interact with one another by logging into the Marratech Manager Edition software installed at the base hospital.

In addition to this, each vision centre is connected to at least one Aravind Eye Hospital. An ophthalmologist from the

base hospital is posted exclusively for this purpose in the teleconferencing room. As Aravind has five base hospitals, five ophthalmologists have been posted for this single purpose.

Aravind Eye Hospital

Established in 1976 and taking its compassionate services to the doorstep of rural India, Aravind's stunningly effective strategies vaulted barriers of distance, poverty and ignorance to create a self-sustaining system.

Started in 1976 with eleven beds, Aravind Eye Hospitals, a WHO Collaborating Centre for Prevention of Blindness, today provides the entire range of eye care services from primary eye care to state-of-art tertiary eye care, through its network of five eye hospitals and three managed hospitals with a combined bed capacity of 4,037 serving primarily two southern States, Tamil Nadu and Kerala and also parts of Karnataka and Andhra Pradesh.

In 2008, Aravind Eye Hospitals managed 108,064 out patient visits, through its 30 centres, delivered 16,779 spectacles and did 3074 cataract surgeries. "We do a lot of activities such as direct patient care, community outreach, education and training, research, capacity building and consultancy services," says Dr Namperumalsamy.

"We partner with government and non-government agencies such as WHO and take part in the policy decisions with the National Program of Control of Blindness (NPCB); at the district level."

"We also closely work with District Blindness Control Society (DBCS) in terms of service delivery through outreach camps; and in addition to this, we are also associated with International NGOs like Sight Savers International, ORBIS International, Lions International, and World Diabetes Foundation etc."

In eye care, interventions were predominantly curative as in treatment of cataract and refractive errors and therefore available mainly in urban or semi urban areas—before we took eye care to rural India. "We are crusaders against blindness," says Dr Namperumalsamy.