Aravind Eye Hospital – Eye on Hope

Sometimes miracles do happen. A Human Network Story about how a telemedicine network in rural Tamil Nadu uses technology to increase access to high quality eye care by over ten times while reducing the cost of access for poor patients ten fold

Saturday mornings are not usually busy at the Aravind Vision centre in Rameshwaram, an island in the India Ocean, about 22 kms off the coast of Ramanathapuram district of Tamil Nadu. So, Liberty, who lives in Tangachi Mattam, a village four kilometers away, decided to bring in her 10-year-old, be-spectacled son Timo, to be examined at the centre this Saturday when he complained of irritation in his left eye.

The vision centre is manned by Namburani, a counselor, and Sasikala, a paramedic staff trained extensively by the Aravind Eye Hospital in Madurai. Sasikala examines Timo while pulling up records from a central computer located about 200 kilometers away at the tertiary eye-care hospital in Madurai. They started maintaining these records when Timo first went to the hospital when he was barely a year old, taken there by a worried Liberty, when her infant's eyes started watering extensively.

Now, details pulled out, Sasikala measures his vision – it appears the boy's power has changed and he needs new glasses. She updates his details and to confirm her diagnosis, gets the doctor in Madurai to see the boy and talk to his mother through the videoconferencing facility at the centre. Examination complete, an order for new spectacles is registered. Liberty wants a plastic lens for her son and will have to come back after three days to collect it. And so, 20 minutes after they walked in, mother and son are back on their way home.

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Ordinarily, it would have taken them a whole day to go to Madurai by bus and back, not to mention the cost of Rs. 200 for the round trip. At the vision centre, the consultation with the ophthalmologist cost them Rs 20. And the whole trip barely took a couple of hours. At a cost that less than the price of a cup of coffee in a hip café, one little's boy's eyes can finally return to his school books.

This is the very humane effect that Aravind Eye Hospital is causing across a wide swathe of rural Tamil Nadu. The hospital's broadband network and 23 vision centres have so far have changed the economics of eye-care in Tamil Nadu for more than a million people; Without changing the economics for the provider. How does Aravind do that? Well, most of what an ophthalmologist traditionally does is carried out by a paramedic in the centre. That frees up the ophthalmologist for diagnosis alone; one ophthalmologist stationed at the Madurai hospital consults with patients from six centres. With the result that the hospital has an average return on investment of 40%.

Healthcare for the bottom of the pyramid can be profitable. At Aravind, the average return on investment is around 40%.

Before the vision centres opened up, many people who had eye injuries did not seek help at all. "We opened in April 2007. Before this if somebody got hurt they went to a traditional doctor, or just washed their eyes; sometimes they went to a medical shop and asked for medicines from a pharmacist. Now they promptly come here," says Nagalakshmi , a trained counselor at the Alaganallur vision center which is located 22 kms away from Madurai. "There are a lot of quarries, brick chambers, sugar mills and also a large numbers of farmers in the area. We have so far treated 160 eye injury patients" she finishes.

Pramila, the paramedic at Alanganallur, removes the foreign body in most cases, treats the injury and bandages the eye. In case the foreign body is deeply embedded, she sends the patient to the base hospital. Out of 160 cases so far, they had to refer 70 cases. The center was supposed to cater to 22 villages; the hospital has trained field workers who went door-to-door in these villages motivating people to come. But news about the centre has spread through word-of-mouth and patients come here from 78 villages. If the problem is complex like diabetic retinopathy for instance, the nurse takes the relevant digital images and transmits it to a specialist and a surgery is scheduled.

The idea for telemedicine came after the hospital did an utilisation study in 1996 to look at the efficacy of its rural eye camps – these had been organized periodically over 30 years in several rural locations. They discovered that these camps addressed only 7% of those who needed eye care as a camp was usually held only once or twice a

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year in a location. This statistic prompted Aravind to seek out a permanent access model.

The current model was developed by researchers from the University of Berkeley during a pilot project at Ambasamudram, a district of Tamil Nadu. Sonesh Surana, a PhD student from the university, set up a Wi-fi network connecting the rural centre with the hospital in Madurai. Even though wi-fi is generally local, the researchers set up tall towers in the vision centre and tweaked it so that it could transmit video up to a distance of 35 kms. The broadband connectivity enabled the hospital to put in place a sustainable, sophisticated, interactive model where health care delivery was broken down into two process – examination and dispensation of medicines at the vision centre while diagnosis is carried out by hooking up to a specialist online. With broadband becoming freely available acoss the state, Vision centres are coming up in many more locations.

"In just two years we will have achieved 100% penetration among people who need eye care around the centre" says Manimuthu, the project officer for Vision Centres.

The momentum of the network-based model has accelerated ten-fold the pace at which the hospital can offer eye-care. In Alaganallur there were usually two camps a year, each catering to around 300 patients. Typically, 50 to 60 patients were diagnosed as requiring cataract surgery, 30 people got spectacles and about 10 or 15 were referred for specialty treatments. The new center has already handled 5000 new out-patients in just one year; it has dispensed 820 spectacles, recommended 265 cataract surgeries and another 400 patients have received treatment for various diseases like glaucoma, retinopathy, cornea and other eye problems.

Field workers in a center also offer orientation training for those with permanently impaired vision.

Aravind's Eye Hospital's model offers a unique resolution to a conflicting scenario in a country which daily attracts medical tourists from around the world but where rural poor have no access to address very treatable health problems. Even more uniquely, technology and affordable connectivity options have made this model economically justifiable, and hence sustainable

So while Liberty may have never used a computer in her life, she just contributed one more chapter to the story one of the most compelling technology assisted healthcare delivery models to be seen in this country. After all, isn't

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that what the power of technology is all about? To help us make the connections that count.