Project Khmat Final Report

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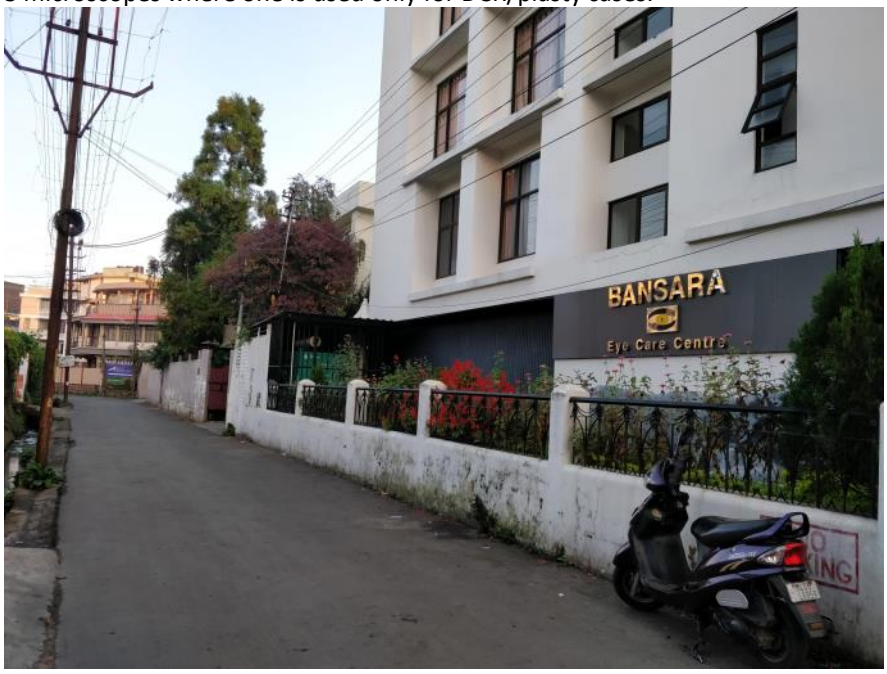
Trip Period: 3-8th October, 2018

Getting to Shillong

There are no flights to Shillong. There are direct flights to Guwahati from most cities in India including Bangalore. Shillong is a 3 hour drive through a good 4 lane highway from Guwahati (thanks to Modi's benevolence) . I was picked up from the airport and taken to the hotel I was staying. Sun sets at 5pm in this part of India since it is far east of time longitude. Shillong is known as the rock music capital of India, so the music scene is pretty colourful here. Shillong had a pleasantly cool weather when I visited with occasional rains.

About the Partner Hospital- Bansara Eye Care (BEC).

It is a private hospital based in Shillong and has 6 vision centers around Meghalaya (like the Arvind/LVPEI model). It was started by Dr. Jennifer Basaiawmoit in 2009. Dr. Jenny is an AIIMS alumni was director of eye hospital attached to the local civil hospital, Shillong when she retired. What was just a small clinic during her govt service was developed into a very good hospital after her retirement in 2009. The hospital is very well equipped including 2 OCT machines (Optovue and Zeiss) and 2 Fundus/FFA camera, Lenstar, HFA, USG, etc. They have 2 modular OTs with HEPA filter. 3 microscopes where one is used only for DCR/plasty cases.



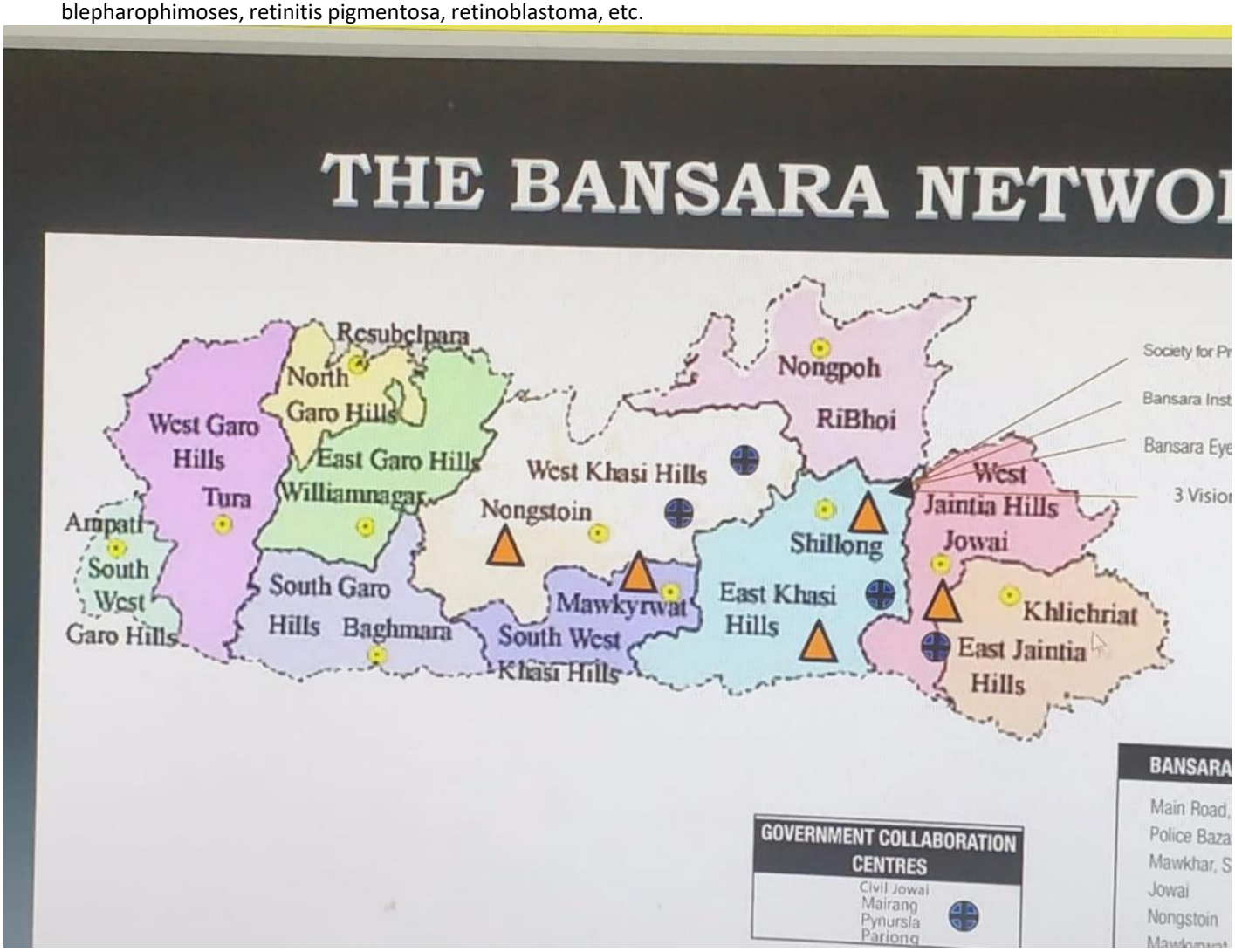
About the Family

Dr. Jenny has 4 children. Both daughters are ophthalmologists but only one of them- Tania is practicing with her while the other daughter is in Coimbatore. Tania is a VR surgeon who has completed her fellowship in Narayana Nethralaya and now is the only fellowship trained VR surgeon in Meghalaya. Dr. Jenny's son Aaron is the CEO of BEC. Aaron has a management background and is very attuned to issues that are plaguing the system in Meghalaya having grown up around the hospital.

About Meghalaya, eye care burden and the community outreach programs.

1. Meghalaya has 3 major hills with 9 districts. Their community outreach programs and a full time vision center is in 6 of those 9 districts. Refer to map for the details. Their vision center is run by a trained senior optom, a receptionist and one local help. They have a slit lamp and auto refractometer at the vision center. They sell glasses to the local population after refraction by the Optoms. They also act as a screening place for feeding cataract patients to their base hospital. They also look after the follow up once surgery is done, prescribing glasses after a month and in doing so collecting follow up data and updating the master sheet in the base hospital. This is now a well-oiled machine.
2. Dr. Tania has started the ROP program in Shillong. She feels there is a lot of scope there and wants to take up Retinoblastoma screening & management as well.

3. They have a blind school established by Dr. Jenny about 20 years back and now it has become a default school for the disabled with vocational training. This school is right in front of the base hospital in Shillong.
4. Government hospitals are predictably not up to the mark and most ophthalmologists do not even operate. They just see patients in the OPD and dispense glasses. There is one central institute called NEGRIMS which is supposedly a big eye center apart from the eye hospital under the civil hospital banner. Not much else apart from small district hospitals scattered around the state. No one knows what the quality of eye care is in those regions since there is no accountability on any of the doctors.
5. Currently there are no other private eye hospitals in Meghalaya and at least none doing any community outreach program.
6. The local population's diet consists mainly of rice with very less meat and almost no green leafy vegetables. This results in lot of dietary deficiency. Vitamin A deficiency is the most common and almost all children I saw had bitot's spots and skin dermatoses.
7. Since there is not much migration from these parts nor into it from outside, there is widespread consanguineous marriages in the region especially among the tribes. This gives rise to many genetic disorders in the population which are more than the national average- eg- blepharophimoses, retinitis pigmentosa, retinoblastoma, etc.



Doctors and surgery load at Base hospital in Shillong.

Their annual cataract numbers are around 1500. However only 4000 cataracts are done by the whole state. So BEC does the lion's share of the cataracts in the state. Their star cataract surgeon is a Dr. PK Sarma who does cataract, squint and basic oculoplasty. Dr. Batriti Wallang is a Pediatric & Squint surgeon trained in LVPEI , working since the last 1 year. So totally 4 full time ophthalmologist plus 1 senior VR surgeon from Guwahati comes to Shillong to do surgery.

Spectacle on wheels concept

This is a very interesting concept. A optician's shop on wheels. This large van donated by a generous donor is a fully equipped optician's shop which moves to peripheral part of Shillong and surrounding

regions. This an Essilor initiative. The grinding unit, an auto-refractometer and slit lamp goes in the van and a senior optometrist and a junior optom go in the van as well. The glasses are made and given within the hour. It is apparently profitable too as it spares the patient to come to the city for just spectacles. This exercise also helps in branding, screening as well as getting referrals back to main hospital when it more complicated than refractive error.

School of Optometry

They have an Optometry school running since 2006. They have both bachelors and masters program. Most of those graduating are put to work in in their hospital and vision centres. They are sent for 3 months internship in SN followed by 3 months in LVP. I was also mighty impressed by these optoms. They are trained in specific disciplines. They have a orthoptist, retina optom and a different set of optoms for refraction. They function like how optoms function in LVP taking care of diagnostic instrumentation, controlling OPD and OT flow of patients. Some of them are so good you might mistake them for an ophthalmologist. These optoms form the backbone of their hospital as well as their community outreach.

Trip to Ranikor- eye camp, patient home visit and Vision Center at Mawkyrwat- 5th October, 2018

Ranikor about 4 and a half hours from Shillong. Terrain to get there is pretty challenging. Some areas were like national geographic- Into the wild kind of thing. There is no Indian cellular signals in these areas and even locals use Bangladeshi SIM cards on their mobile phones.

We went to the free eye camp in Ranikor at a school there. 250 patients seen from 8am to 2pm. But the cataract yield from such a big camp was only 12 and they have nearly a 50% dropout rate among those screened. These camps are run by 2 senior optoms, two interns and two students from their optometry college. Those not getting full correction are screened for cataract or retinal diseases and referred to their base hospital in Shillong. Those getting good refractive correction are sold spectacles with Essilor lenses with a waiting period of 1 week.

We then went to three patients houses near Ranikor who had got cataract surgery done through these camps. Outcomes were good in all the cases. All of them phaco.

We then went to the Vision center in Mawkyrwat. I was quite impressed with the processes that has been set up. It is already a self-sustaining unit within 1.5years of being set up. The Vision centre is totally digital EMR based and they can get walk in and village wise data in an instant at the touch of a button. This vision centre covers about 60+ villages in that region. The master sheet is updated in Shillong collating data from all 6 vision centres. Cost considerations for setting up a vision centre was discussed. They have found that it become self sustaining within a year based on their previous experience by sale of spectacles funding their OpEx costs. They have 6 VC at present and 2 more in the anvil at Nongpoh and Khlichriat. They don't have any plans at present to start at Garo Hills due it's distance, cost and logistical problems.

Garo Hills (refer map again)

The one big problem I see in this region is the terrain. It is very difficult for patients to travel from one place to another in Meghalaya. As a result the three Garo hills districts is not covered. Also, there has been some insurgency trouble in the past in that area which is not so these days. These districts are apparently full of patients who need cataract sx but cannot access it. The relatively affordable from there go to Guwahati to get surgery done while leaving the poor behind. This is definitely an area of need.

In Garo hills, one of the proposals discussed

1. BEC to have a vision centre set up in one of the Garo hills districts. They should screen the local population for cataracts and keep the list ready for a period of 2-3 months worth of screening. Once we have critical number of cataract patients we need to plan for surgery.
2. All the cataract Pre-op investigations including blood, fundus and Biometry to be done locally 1 month ahead of proposed surgery camp.
3. To have a local district hospital earmarked for surgery camp, some place near to the Garo Hills vision center.
4. TVM raises funds for the 300+ cataract surgeries- Costing to be done by BEC.
5. TVM organizes a team of high volume cataract surgeons to go and operate there for 4-5 days.

BEC will help with the local logistics as well as comfortable stay at the Garo Hills for the TVM team.

6. Alcon/Zeiss helps set up a good quality OT at this district hospital with instruments- Microscope, slit lamp, Phaco machines, IOLs, other consumables loaned for the duration of the camp.
7. BEC helps with the nursing staff to assist in setting up OT and assisting surgeons during the camp.

I have discussed this proposal with Aaron without the above nitty-gritties of course. He was of the opinion to have the surgery camp at the base hospital itself to have better control over the sterility and surgical protocol issues. They also cannot afford to send any of their main surgeons especially Dr. Sarma for a camp outside Shillong. I understand Aaron's viewpoint and his alternative is ideal. However, the logistics issue will make this a chaotic engagement. It takes anywhere between 12-14 hours for the buses to reach Shillong from the Garo Hills area. We are talking about 7-8 days worth of logistics and costs of transport, food, shelter, surgery and post op care. Also we need to transport 300 patients and get them back over such a long distance. The cost of the travel and accommodation might get more than the surgery itself.

The Glaucoma Workshop on 6th October, 2018

The glaucoma workshop the day previous to the CME was not attended by a lot of people outside the hospital. It had to do with the day being a Saturday and an active day for practice for most ophthalmologists.

However, the doctors who did attend took full advantage of Dr. Maneesh's workshop. BEC had called 25 patients for this workshop to discuss the various cases. The ophthalmologists including the Optoms who had joined the class kept Dr. Maneesh engaged till late evening. The hospital staff made full use of it.

CME Glaucoma/Orbit and Cataract on 7th October, 2018

This CME was well attended by the regional ophthalmologists- young and old. Since Meghalaya doesn't have a medical college with Ophthalmology residency, there were no residents among the audience. However, those who attended were very enthusiastic and the Glaucoma talks were very well received. I went to spoil everybody's lunch by showing gory pictures in my talk but the CT/MRI for ophthalmologists talk was well received. About 15 doctors attended the talk. It was a full house including the several in house optometrists who attended the CME.

Possible projects and collaborations

Aaron and I spoke for 3-4 hours on what areas TVM and BEC can work on together.

Clinical

1. Cataract Surgery camp in Garo Hills- as proposed earlier in the report
2. They are looking for a sponsor for their vision centre (VC) and they are willing to name the VC with the name of the donor. I have reserved any comments on this till we can discuss this among us.
3. Hospital staff training- Optometrists and Ophthalmologists. If TVM can facilitate short term fellowships for their optoms and ophthalmologists in Singapore, it will improve their processes and keep their staff from moving out.
4. Sub-speciality surgeons to perform complicated surgery in Cornea, Glaucoma and Oculoplasty. If we can get local surgeons to visit there once a month BEC can pool in a mixture of paid and free cases. The paid cases should be able to keep the project self-sufficient and the surgeon is also paid for their efforts.
5. They have infrastructure for Tele-ophthalmology. There is this website which helps facilitate transfer for diagnostic imaging- **Pellucid Networks (** http://pellucidinc.com/eyestation/). SNEC is one of its clients. They had used it during the demo period but have discontinued it due to their high subscription rates. TVM can help in getting the Tele-ophthalmology project running with technical and professional support via our volunteers. We can set up monthly once sub-specialty tele-ophthalmology clinics. We had thought about Tele-ophthalmology in Sambalpur but it never materialized but here there is enough enthusiasm from BEC for a Tele-ophthalmology project to take wings.

Academic

1. **Research Mentorship**- Like I said earlier in the report, they have impressive data recording processes in place. They also have an IRB/ Ethics committee already formed locally for their optometry college dissertations. Now what they need is a mentor who can guide them about what data to collect, what data is valuable and how to use the data to their institution's benefit as well as publish epidemiological data by themselves. Rupesh can take the mentorship role here.
2. **Research Internship**- This is a very good area for public health experts and epidemiologists to collect data and publish their research. This is virgin territory as there is hardly any epidemiological data in this region. TVM can start a TVM research internship and BEC can give local logistical support. If Jayant can tap the Johns Hopkins public health guys, we can get this started. One of my friends who is doing his PhD in Public health space in Harvard was very interested in such an internship if available. This might be a self-sufficient project since the grad and PhD students from US come with allocated research funds. This will also highlight the issues in the region when these researchers publish epidemiological data in reputed journals. This will also aid in branding TVM and bring more funds into our organization.

Best,
Raghuraj