

# 2008 Semiannual Report



# Delivering Health Services in Rural Nepal

Through the work of Nyaya Health, Achham has seen a massive change in health delivery over the last four months. Since the opening of our clinic in April, our staff, including the only allopathic physician in the district of nearly 250,000 people, has served over 6200 patients.

In an area whose health system was ravaged by a decade-long civil conflict and by severe poverty marked by per capita income less than 50 cents a day, we have laid the infrastructure necessary for providing reliable and effective medical care. We have continued to work with the government and local citizens to achieve our goal of rapidly scaling up health services in the region.

To combat maternal mortality rates that are 100 times greater than those in the United States, we have hired five midwives and established a community health worker network. We have recently initiated the first ultrasound program in the region. We have initiated the programs in the prevention of mother to child transmission of HIV and community-based directly observed therapy for tuberculosis to combat some of the highest HIV and tuberculosis rates in South Asia.

To meet the dire need for inpatient and surgical services, we have begun the planning and approvals process for renovating an abandoned government hospital. We project three-year costs of \$580,000 to achieve this objective. To date, we raised \$170,000 for this purpose. Please read the enclosed materials and consider joining us in our mission to rapidly and effectively develop a locally-driven, accountable health system in rural Achham.

Sincerely,

The Nyaya Health Team



# Nyaya's Mission of Rural Health Equity

## *Nyaya Health Mission in Achham*

- Building healthcare infrastructure in resource-deprived areas.
- Fostering local ownership over healthcare.
- Collaborating with the government in serving the poor
- Improving transparency and collaboration in global health delivery.



*Nurse Midwife Sangita sister with a long line of patients*

## *Relevant statistics of Achham*

- Number of citizens: 250,000
- Number of allopathic doctors: one, employed by Nyaya Health
- Number of ultrasound machines: one, operated by Nyaya Health
- 99.5% of babies are delivered outside a health center
- 1 in 125 deliveries result in death of the mother
- Infant Mortality Rate: 64 per 1000 live births
- Under-Five-Years-Old Mortality Rate: 83 per 1000 live births
- 60% of children are chronically malnourished
- Average person makes 50 cents a day
- Over 50% of the men migrate to India in search of work; over 7% returning from Mumbai are HIV-positive
- Nearest functioning airport and operating theater: 10 hours by bus, costs 1 month's average income
- Nearest functioning intensive care unit with ventilator: 14 hours by bus

# Healthcare Equity: Building Infrastructure

- We have built one of the only safe delivery centers in the district.
- We have rolled out a prevention of mother-to-child transmission of HIV program
- We have started home-based directly-observed therapy (DOTS) program for the treatment of tuberculosis.
- We have established the first two internet connections in the area, via wireless cellular and satellite.
- We have conducted automated blood tests with a counter donated by QBC Diagnostics.



*The delivery suite*



*Santoshji at work in the lab*

- Buddha Air provides free air freight for the transportation of essential medical supplies.
- Lotus Energy provides 12% reduction for our inverter and battery system to promote sustainable energy in Achham.
- We have initiated an ultrasound program with a new GE Logiq E machine donated by International Aid. The machine has probes for obstetrical, abdominal, lymph node, venous, cardiac, and pulmonary applications. A \$40,000 value, it is the only machine in an area spanning one million people.

# Fostering Local Ownership Over Healthcare

- All 16 paid medical staff are Nepali; 15 of these staff, including our physician, are local Achhami Nepalis. Nyaya employs six dalit ("untouchable") health workers.
- Nyaya has hired four community health workers (CHWs) who work to improve access and accountability of the health system in their villages. These villages total approximately 2,000 people. After the initial pilot, we anticipate expanding the program to cover an additional 13,000 people.



*Gauri sister conducting a CHW training*



*CHW Pabitraji interviewing a family*

- Local community members have played an active role in interfacing with the central government to expedite the approval process for our planned hospital expansion.
- Members of the Bayalpata community are working with Nyaya Health to arrange for donated land to build a new CDMA cellular tower. This will develop essential telecommunications infrastructure in the area.

# Collaborating with the Government in Serving the Poor

- The government provides our clinic with contraception materials, antenatal vitamins, tuberculosis medicines, antiretroviral medicines, and vaccinations.
- We have become the government vaccine holding site for the local area.
- We have become an official DOTS tuberculosis site and collaborate with the government on medicines, staff trainings, and surveillance.



*Dr. Thapa and Kamalaji with malnourished child*



*Young boy being weighed at the clinic*

- We have been designated a safe delivery center under the government's safe delivery promotion scheme.
- We have integrated our data collection into the Ministry's Health Management Information database.
- We are working to integrate our CHW program into the government's female community health volunteers system.
- We are actively developing plans for renovating and managing the Ministry's abandoned hospital in Bayalpata.

# Case: Tackling Tuberculosis

She came to our clinic en route to India in search of high-quality medical care. Twenty-five years old, she had suffered from a cough and difficulty breathing for two months. She had received no treatment other than a haphazard mixture of antibiotics and cough tablets. When she arrived at the district hospital (five hours from our clinic by foot or bus), she was told that the doctor was not there and that she should go to India. Like all people leaving Achham, she had to pass through Sanfe Bagar on her way.

Upon entering the Nyaya Health Clinic, the patient was received by Udayji, our health assistant. After seeing the severity of her condition, Udayji triaged the patient to Dr. Thapa. Dr. Thapa examined her and determined that she had fluid in her lungs. He then performed thoracentesis and sent the specimen to Santoshji, our lab technician. Dr. Thapa noted that the chemical profile of the fluid, the high prevalence of tuberculosis in Achham, and her symptoms made tuberculosis the most likely diagnosis.

Dr. Thapa prescribed anti-tuberculosis medications, which are provided by the government to our clinic. He noted that follow-up is critical but challenging in our area. "The only way to prevent the spread of tuberculosis and decrease transmissions is to treat people with tuberculosis. With Nyaya Health's community health worker program, which both identifies suspected cases in the community and provides treatment in patient's homes, this job will be done more effectively."



*Urmila sister placing an intravenous line*

# Case: Walking for Hours, Preventing Rabies

Towards the end of July, a rabid dog entered one of the villages about an hour away. Four children, aged five to ten years old, were bitten. The dog also bit a buffalo calf and another dog. The children were brought to Nyaya's clinic for treatment.

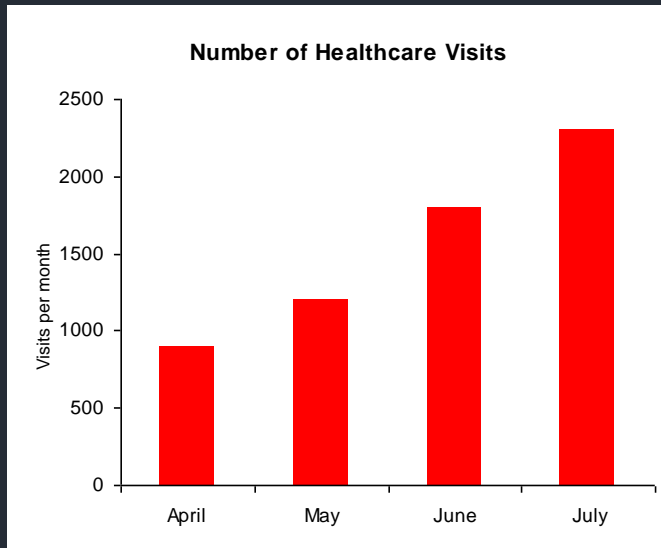
The health assistant Udayji cleaned the wounds and provided tetanus vaccinations. The clinic is stocked with anti-rabies vaccine from the government. Since the clinic did not have the full twenty doses necessary to complete the five-dose course for all the children, a father of one of the victims volunteered to walk to the government's central supply in Achham, an eight hour walk each way.

For all children, Nyaya was able to provide the first shot just one day after the children were first bitten. The children have been coming regularly to Nyaya's clinic to complete the full course of anti-rabies vaccination. To date, no children have shown any sequelae of the attack.



*In the Nyaya Health pharmacy, ready to dispense essential medicines and vaccines*

# Snapshot of our First Four Months

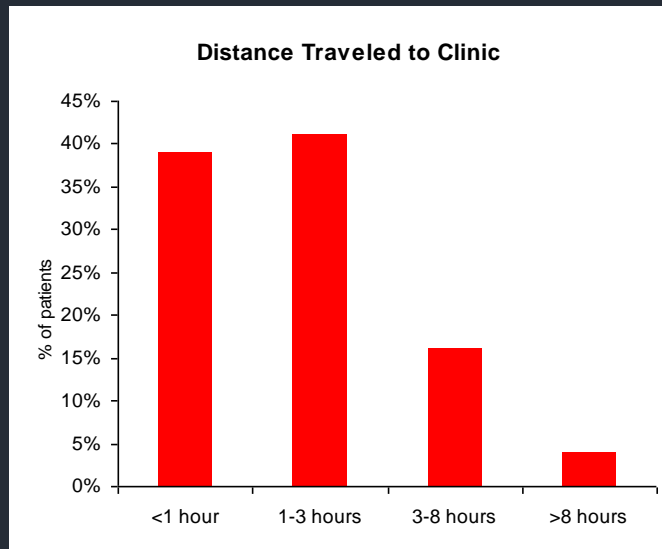


## Select Conditions Treated at Clinic

Cellulitis  
Chronic Obstructive Pulmonary Disease  
Chronic Diarrhea  
Dehydration  
Lacerations  
Peptic Ulcer Disease  
Urinary Tract Infection  
Abscess  
Respiratory Tract Infection  
Snake Bite  
Humerus Fracture  
Congestive Heart Failure  
Pyoderma  
Hydrocephalus  
Anemia  
Juvenile Rheumatoid Arthritis  
Rheumatic Heart Disease  
Uterine Prolapse

Total visits:	6200
Percent visits Female:	64%
Percent visits dalit caste:	38%
Percent children malnourished:	65%
Percent children severely malnourished:	34%
Number of clinic-based deliveries:	17
Number of antenatal patients:	172

# Snapshot of our First Four Months

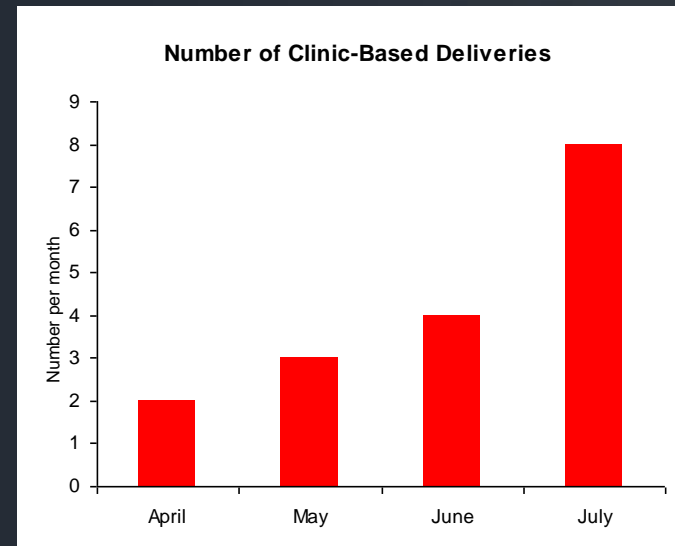


## *Complications of Pregnancy*

Percent antenatal patients anemic:	80%
Antenatal patients HIV+:	1
Antenatal patients hepatitis B+:	1
Postpartum hemorrhage:	3
Pregnancies requiring oxytocin:	8
Manual removal of placenta:	3
Vaginal lacerations repaired:	3

## *Statistics from the Lab*

HIV tests conducted:	83
Percentage HIV-Positive:	9.6%
QBC diagnostics hematocrit:	129
QBC diagnostics, CBC:	56
Colorimetry-based Hgb tests:	115
Colorimetry-based glucose tests:	62
Total laboratory tests performed:	1357



# Case: Preventing Postpartum Hemorrhage

A young woman, pregnant for the first time, came to the clinic at around seven in the morning with painful contractions and bleeding. Dr. Jhapat, called in from the staff quarters, finds a grade 2 anterior placenta previa (where the placenta obstructs the birth canal). Together with Nyaya board member Dr. Aditya Sharma, they perform ultrasound to see a reassuring fetal heart rate, a full term fetus based on fetal measurements, and a vertex presentation appropriate for labor.

Acknowledging the gravity of the situation, they begin to make arrangements for transfer to a hospital about seven hours away that presently had an obstetrician in residence.

They also begin preparing magnesium sulfate, a drug that stops labor, to help to buy time ahead of the long journey. Prior to administering the drug, however, the baby begins to crown. Fortunately, the placenta is displaced upwards instead of outwards, and the placenta does not rupture (rupture can cause life-threatening bleeding).

Dr. Thapa delivers the baby boy quickly, but the infant is cyanotic, inactive, and not breathing. Shortly after some manual suction and provision of oxygen from the oxygen concentrator, the baby perks up and begins crying.

The mother does well; the placenta delivers easily and subsequent bleeding is minimal. Both mother and her newborn baby are discharged from the clinic in the evening.



*Dr. Thapa performing obstetric ultrasound*

# Promoting Transparency and Collaboration in Global Health Delivery

As an open-source and transparent organization, we continue to make available all our planning documents, budgets, and clinical protocols freely available online through our rapidly-editable webpage, or wiki.



*Floor plan of the Telemedicine & Education Center*



*Design of the Telemedicine & Education Center*

As the site for Asia in the Open Architecture Network Challenge, we evaluated entries from 103 architectural teams to design a telemedicine center for our clinical work in Achham. All of these designs are available on-line.

# Energy and Communications Solutions

## *Energy Solutions*

To meet the critical need for a cost-effective and reliable energy supply in rural Achham, we have teamed with the Nepali energy company Lotus Energy. The system utilizes a 4.6 kilowatt inverter that draws energy from the power lines ("grid"). This energy is used to power 12 12-volt 120 amp-hour batteries. When the grid is off, the batteries power the clinic. Finally, in cases of prolonged outage, we have a 5.0 kilowatt diesel generator that can charge the batteries or directly provide power.



*Inverter and battery system from Lotus Energy*



*Satellite on top of Nyaya Health Clinic*

## *Communications Solutions*

A critical aspect of our work has been maintaining lines of communication between Achham, Kathmandu, and the USA. Our oversight strategy is to have at least 1-2 volunteer board members on site in Achham at all times. Telecommunications is critical to this endeavor. We presently utilize a 0.96 meter very small aperture terminal (VSAT) that achieves 64 kbps. This is sufficient for our needs, which includes voice and text chat between members in Achham, Kathmandu and the USA, and data and file transfer between our different sites.

# Case: Managing Postpartum hemorrhage

Around nightfall, she arrived to our clinic, as many acutely ill patients do, being carried by relatives. The 22 year old woman was incredibly weak.

An untrained family member delivered her baby girl approximately four hours prior to arriving at the clinic. The placenta, however, had not come out and she was bleeding profusely. Our on-call nurse midwife Sangitadidi assessed her pulse and respiratory rate. Recognizing the severity of the case, she established an IV line. She then sent the night watchman to fetch Dr. Thapa.

The birth canal was full of blood clots and was closed, with the placenta inside, inaccessible. He could not negotiate his hands through the birth canal. Given that her hemoglobin was at a life-threateningly low level of 3, the team stabilized her with intravenous fluids and referred her to the hospital in Dhangari for blood transfusion.

After a 12 hour private jeep ride that cost approximately \$120, or nearly the annual per capita income of Achham, she reached the hospital. There, she received 4 units of blood and underwent a DNC to remove the placenta. She recovered and returned home in good health to her baby girl.



*Pregnant woman being transported to Nyaya Clinic*

# Expanded Service Plan

Through our experiences in Achham, and through our discussion with the local community and government, it has become clear that essential inpatient, transfusion, and surgical services must be provided to make a significant and comprehensive public health impact in the region.

Local citizens and government officials have offered us an abandoned hospital for this purpose. The Boston chapter of Architecture for Humanity has offered to oversee the renovations and work with our Nepal-based contractors.



*Bayalpata Hospital that Nyaya is renovating*

## Next Steps

- continuing to strengthen local collective action in advocating with the government for improved health services
- solidifying the Ministry of Health's financial contribution to hospital operations
- renovating the abandoned government hospital in the neighboring village of Bayalpata;
- expanding primary care and normal delivery services to the hospital;
- solidifying and expanding our community health worker referral network;
- expanding diagnostic ultrasound;
- establishing X-Ray services;
- building a 14-bed inpatient ward to support our existing 24-hour maternal services;
- establishing blood transfusion capacity;
- expanding our existing laboratory services;
- developing a sustainable energy solution for powering our health services
- deploying a surgical team capable of delivering essential surgical services including Cesarean sections, appendectomies, and basic orthopedic procedures.

# Expanded Service Plan: Join the Campaign!

We will be raising \$580,000 from our own fundraising campaign, which--together with resources from the government and in-kind donations of medical equipment--will provide the initial capital and 3 years of operating costs needed to fund new inpatient and surgical services. We have raised \$170,000 to date for our expanded services.



Timeline for the Roll-Out of Expanded Services			
Activity	2009	2010	2011
Community Dialogue and Mobilization	[Red bar spanning 2009, 2010, and 2011]		
Government negotiations	[Red bar spanning 2009, 2010, and 2011]		
Site planning	[Red bar spanning 2009, 2010, and 2011]		
Renovations	[Red bar spanning 2009, 2010, and 2011]		
Expansion of community health network	[Red bar spanning 2009, 2010, and 2011]		
Enhanced primary care services	[Red bar spanning 2009, 2010, and 2011]		
Delivery Services	[Red bar spanning 2009, 2010, and 2011]		
Ultrasound	[Red bar spanning 2009, 2010, and 2011]		
X-Ray	[Red bar spanning 2009, 2010, and 2011]		
Inpatient Services	[Red bar spanning 2009, 2010, and 2011]		
Blood Transfusion	[Red bar spanning 2009, 2010, and 2011]		
Expanded Laboratory Services	[Red bar spanning 2009, 2010, and 2011]		
Surgical Services	[Red bar spanning 2009, 2010, and 2011]		
Fundraising Targets	\$226,059	\$177,701	\$174,381

## Donate Today!

\$50 will pay for the materials and staff for a safe, normal delivery to one woman

\$500 will pay the costs for two community health workers for one year

\$3,000 will pay for the costs for three midwives for one year

\$15,000 will pay for the capital costs of the expanded hospital laboratory

\$30,000 will provide for the capital and one-year operating costs of a blood transfusion center

\$65,000 will provide for the capital and one-year operating costs of a surgical suite

# Thanks to our Institutional Supporters

- America Nepal Medical Foundation
- Buddha Air
- Cents of Relief
- EquityEdit
- Ford Foundation
- Google Grants
- International Aid
- The International Foundation
- QBC Diagnostics
- Open Architecture Network
- The Shelley and Donald Rubin Foundation
- World Health Imaging Alliance
- William Prusoff Foundation
- Yale University

# Join Us...

*Sustainably Contribute.* Make regular contributions through our website:

[http://www.nyayahealth.org/donate\\_now](http://www.nyayahealth.org/donate_now)

*Contribute ideas.* Join one of our working groups and apply your expertise to a pressing technical issue: <http://nyayahealth.pbwiki.com>.

*Create a new fundraising strategy.* Set up something like [equityedit.org](http://equityedit.org) to use your skills to generate funds.

*Volunteer in Achham.* Nyaya Health is recruiting a family practice physician with surgical skills to work in Achham for 1-3 years to train our Nepali healthcare team.



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