

ANNUAL REPORT

2075/76 (2018/19)

BNMT NEPAL



Serving the People of Nepal



INNOVATIVE APPROACHES FOR SUSTAINABLE SOLUTIONS



GeneXpert handover in Pyuthan



Capacity building workshop on SRHR



Patient counselling in Dhanusha

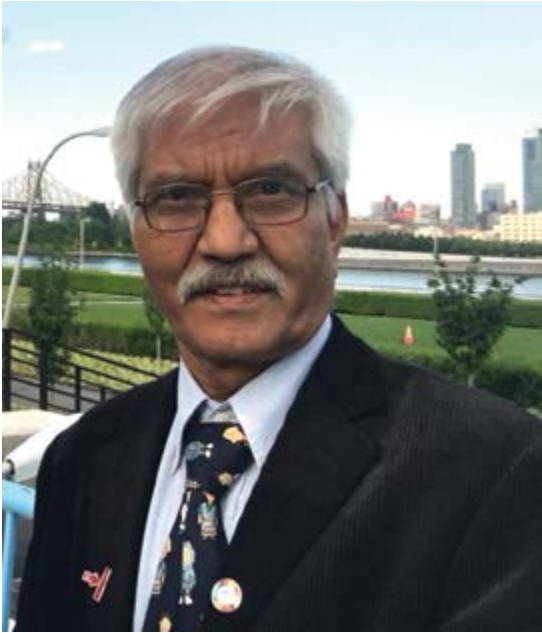


Qualitative research training facilitated by Karolinska Institutet

THANK YOU NEPAL GOVERNMENT AND RESPECTIVE DONORS



FOREWORD



MR MAHESH SHARMA
Chairperson

Birat Nepal Medical Trust

This year has been yet another year of satisfaction and excitement for the organisation, its staff members and all the well-wishers within the country and outside. We worked more closely with Ministry of Health and Population, provincial and municipal health entities and officials in collectively addressing the challenges of tuberculosis and other health problems with innovative ideas.

The country is moving forward with federal structure of governance. Now the Provinces and Municipal governments are taking more and more responsibility in managing health programme in their respective areas. It is impressive to see that all the provinces have presented their budget to the parliament where health allocation was key to their budget speech. In this period, federal government has initiated a very important but complicated process of health staff deployment to the provinces. It is a daunting task to adjust the so far centrally managed staff into seven provinces. Smooth health service delivery and implementation of other health programme critically depends on the successful completion of staff adjustment.

Keeping in view of the changing context, we are also making adjustment in policies and strategies to be more responsive and capable in responding the health challenges. We have realigned our strategic direction accordantly into five strategic pillars – which we believe will enable us to better resource mobilisation and work more closely with Ministry of Health and other stakeholders.

This year also TB remained the focus of our programme with over significant number of new TB case detection and enrollment in treatment. A short pilot was implemented in using DRONE, first time in Nepal towards facilitating early case detection and treatment in Pyuthan district in collaboration with Pyuthan district health office, provincial authorities and local authorities. We are particularly pleased to work with Indrawati municipality and local partners in advancing sexual and reproductive health rights in Sindhupalchok district. Besides, in collaboration with The Royal Marsden Hospital & ICR, London, we were proud to be able to facilitate a three months oncology fellowship to four Nepali doctors in London.

I would like to recall long history and legacy of BNMT from 1968 when BNMT was established and supported throughout by international and national experts, policy makers, diplomats and others. Finally, I would also like to sincerely appreciate all the well-wishers, national and international partners, donors and funding agencies for their continued support, and look forward at more stronger and meaningful partnership to address some of the health challenges in the country.

It is time to unite in addressing the health problems in Nepal.

Thank you

MESSAGE FROM

THE EXECUTIVE DIRECTOR



MR SUMAN CHANDRA GURUNG

Executive Director
scgurung@bnmt.org.np

It is my great pleasure to share the annual report for the fiscal year 2018/19 (2075/76) . It has been an exciting and innovative year for BNMT Nepal.

This year significant achievements have been made in several projects, continuing our work to improve healthcare access and quality for all Nepali people. In collaboration with the National TB Program, the IMPACT TB and TB REACH Wave 5 projects have identified many TB cases in the community and helped them to access and complete treatment. These projects contributed additionality to the background district case detection and provide evidence to inform implementation strategies for the National Strategic Plan. Our work with all stakeholders, across government, affected communities, healthcare workers, implementation partners and international researchers is building the capacity for Nepal to address the tuberculosis epidemic with evidence informed policies and strategic locally relevant innovations.

The Amplify Change-supported Sexual and Reproductive Health and Rights (SRHR) project is continuing to build a stronger, more inclusive movement for SRHR through advocacy and awareness raising program in the communities. BNMT Nepal also launched the DrOTS project this year which includes new technological approaches (Drones, and medical adherence monitoring devices) to facilitate sputum transportation from hard-to-reach areas and enable patients to complete therapy with less impact on livelihoods.

I want to highlight some remarkable accomplishments that we achieved this year.

- » The IMPACT TB project had a raw yield of 1,133 cases and an additionality of > 13% in districts using BNMT supplied GeneXpert.
- » Active TB case finding using GeneXpert was shown to contribute more than three times the additionality achieved using smear microscopy in IMPACT project districts. (GeneXpert =13% vs smear microscopy= 4% additionality) and shows GeneXpert scale-up is essential in Nepal to achieve the National Strategic Plan targets for TB
- » The TB REACH Wave 5 project had a raw yield of 1,092 cases and an additionality of 12%.
- » Our health economics research has quantified the severe impact of TB on affected households in Nepal and provides strong evidence that increased socio-economic support interventions are a priority.
- » Our health systems data shows that the cost of diagnosing TB using GeneXpert can be substantially reduced if the government provides tax relief on import of both GeneXpert machines and cartridges.
- » The Global Fund/Save the Children International-supported project in Eastern Nepal has diagnosed 792 TB cases to date.
- » BNMT is implementing the Sexual and Reproductive Health and Rights (SRHR) project to improve sexual health of young people by improving their knowledge on SRHR and advocating for their rights in Sindhupalchowk.

My sincere thanks to all our donor, particularly European Union, Stop TB Partnership, Wellcome Trust, Amplify Change, Nick Simons Foundation, Global Fund/Save the Children International and Everest Marathon.

All these great things have been achieved with the hard work and dedication of BNMT staff, excellent team work, trust worthiness and support from national and international team. I am also very grateful to the government (Ministry of Health and Population (MoHP), Ministry of Home Affairs (MoHA), Department of Health Services (DoHS), National Tuberculosis Center, D/PHOs, provincial, local) and External Development Partners for their enormous support to strengthen the health services in Nepal.

We look forward to another exciting year of progress ahead.

BNMT NEPAL STRATEGIC PILLARS (2020-2025)



Accelerating the **Elimination of Infectious Disease**



Building Resilient, Prosperous and **Healthy Communities**



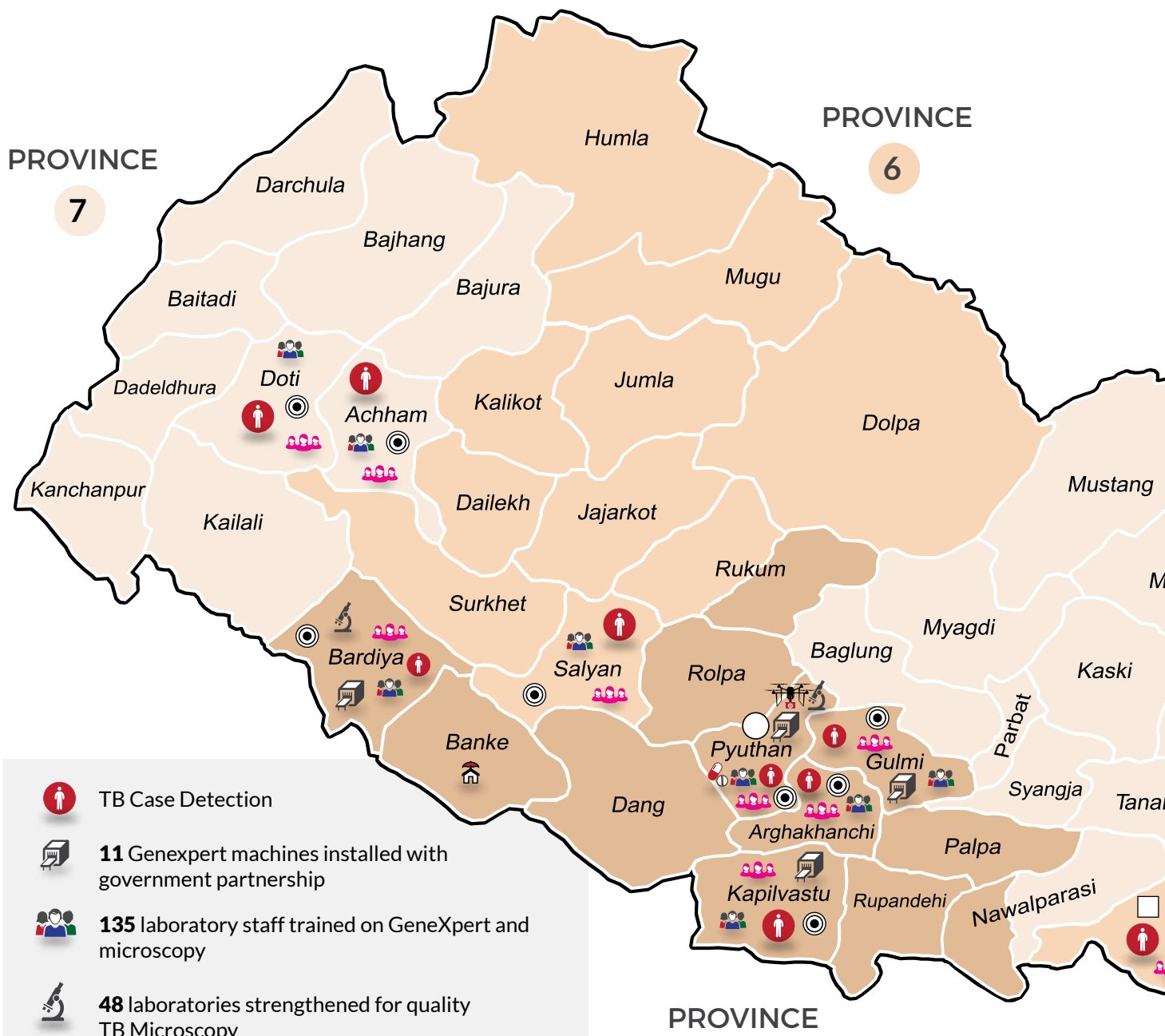
Improving **Mental Health** and Adolescent **Sexual and Reproductive Health**



Strengthening Health Systems and **Increasing Equity of Access**



Generate Evidence to inform Policy and Facilitate **Optimal Strategy Implementation** by **Policy Makers**



-  **TB Case Detection**
-  **11** Genexpert machines installed with government partnership
-  **135** laboratory staff trained on GeneXpert and microscopy
-  **48** laboratories strengthened for quality TB Microscopy
-  **360** Female Community Health Volunteers and BNMT volunteers oriented
-  **2** drones utilized for sputum transportation
-  Wisepill piloted for e-DOTS in **2** districts: Chitwan and Pyuthan
-  **3** Regional Offices
-  **11** District Offices
-  **16** Quality control districts

INDIA



PROJECTS IN 2018-19



↑
CHINA

👤 TB CASE DETECTION BY DISTRICT

Morang - **303**, Jhapa - **197**, Ilam - **55**, Sunsari - **179**, Udayapur - **58**
 Chitwan - **406**, Mahottari - **275**, Dhanusha - **322**, Makwanpur - **130**,
 Pyuthan - **224**, Argakhachi - **15**, Bardiya - **255**, Gulmi - **69**, Kapilvastu - **311**
 Doti - **71**, Achham - **49**, Salyan - **98**



Innovate to accelerate

Dr. Maxine Caws

This year BNMT has been strengthening and expanding our academic research on tuberculosis in partnership with leading global institutions. We aim to inform global policy on tuberculosis by innovating to address local challenges. The Global END TB strategy has set ambitious targets for TB elimination by 2035, but it is universally acknowledged that these targets are unachievable without significant advances in our weapons to fight tuberculosis, alongside intensified and sustained political commitment from all stakeholders. Sadly tuberculosis research globally remains chronically underfunded with current funding around one-third of the estimated need. For Nepal, the national TB prevalence survey has revealed a burden of TB which is two thirds higher than the previous estimate, underlining the scale of the challenge facing the country to make progress in the fight against TB. The survey, which was commended by the international external review mission as a model survey, will report the final analysis in December 2019.



TB elimination is an economic imperative as well as a moral one: globally 33 million people died of TB between 2000 and 2015 at a global economic cost of 617 billion USD. If we do not change our approach between 2015 and 2030 another 28 million people will die unnecessarily at a global cost of 983 billion USD. The complacency around TB must end. Accelerated progress will require research across the full spectrum, from understanding the immunological correlates of host protection and mechanisms of bacterial persistence to understanding social drivers of disease, effective policy translation and advocacy. New drugs, diagnostics and vaccines are urgently required but must also be deployed effectively in the field.

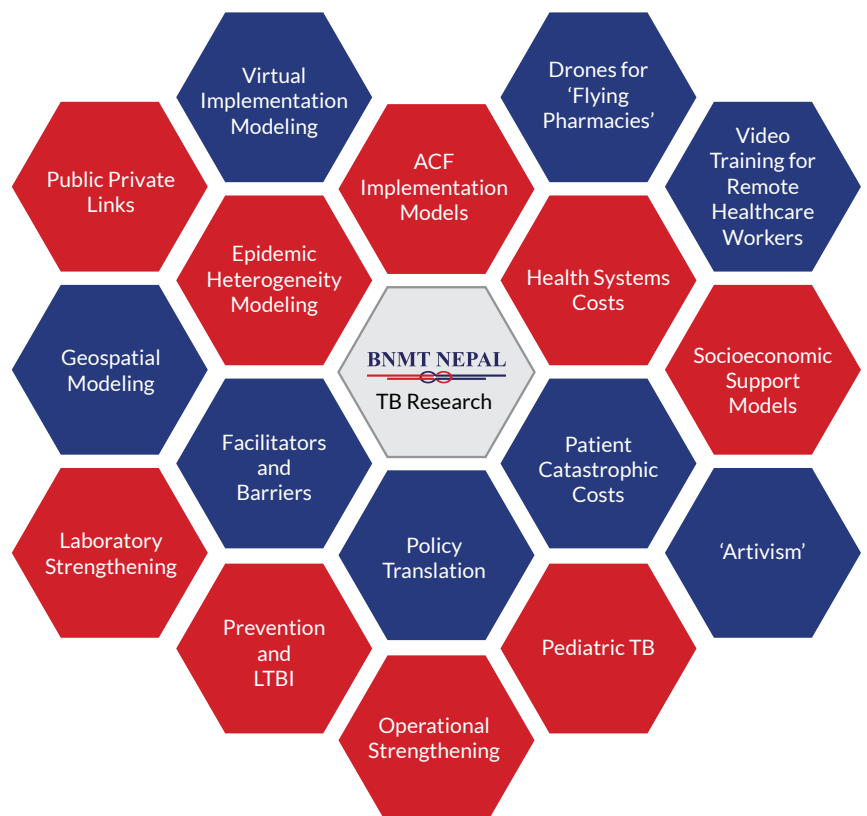
BNMT, in continuation of the organizational tradition, has focused on field evaluation of novel methodologies to help Nepali TB patients. Our research is focused around the core themes of:

- » Developing a strong, effective patient-centric TB health care system accessible to all Nepalis
- » Finding and treating every case of tuberculosis.
- » Supporting patients and their families.
- » Preventing TB transmission.

BNMT is also working to develop Nepali research capacity through the next generation of young researchers, with three PhD students undertaking research at BNMT this year. We have begun to publish some of our early research findings, which you can find more about in this report, and look forward to many more publications in the next year.

Importantly our health economic research has shown that our ACF approach can substantially reduce catastrophic costs for TB affected households which provide a strong incentive to policy makers to improve accessibility of TB services for vulnerable. BNMT is now consulting with stakeholders to develop locally relevant socioeconomic support strategies for trial in Nepal.

We have also published a scoping review highlighting the evidence gaps in



understanding policy translation for active case finding implementation.

TB is a complex multi factorial problem and the solutions are not simple. We must address multiple facets of the problem and understand the challenges in context to make progress. Therefore we have assembled an interdisciplinary team of collaborators ranging from mathematical modelers, health economists, clinical microbiologists and engineers to artists and activists. We will only defeat this ancient foe of TB by working together to achieve a TB Free Nepal for our children.

Oncology Fellowship at The Royal Marsden Hospital /Institute of Cancer Research UK

With logistics and administrative support from BNMT, Royal Marsden Hospital UK sponsored six oncologists from Bhaktapur Cancer Hospital and Bir Hospital (Dr. Ujjwal Chalise, Dr. Sanjay Thakur, Dr. Bishal Poudel, Bishnudutta Paudel, Prof. Dr. Pratibha Rokka) from Nepal to obtain a fellowship at the Royal Marsden Hospital/Institute of Cancer Research UK. The fellowship includes a three month exchange visit to the hospital to understand the latest advances in technology and treatment for oncology care and to exchange expertise with UK consultants and healthcare teams. Through this fellowship the oncologists will adopt advances in the field appropriate to Nepal, advocate for new technological applications and support improvements in holistic, patient-centric cancer care. The Royal Marsden hospital will also strengthen Bir Hospital and Bhaktapur Cancer Hospital through support to oncologists in capacity building, strengthening the palliative care section and support in medical equipment.

Reminiscing a great career enhancing opportunity

It was a wonderful oncology fellowship experience at the hospital from July to September 2018. I take it as a lifetime achievement possible with the support of BNMT team in Kathmandu and Great Britain especially, Co-Chair Dr. Gillian. The Fellowship was coordinated by Prof. Ros Eeles and team at The RMH/ICR London/Sutton. This was truly a dream come true professional exposure and practice changing experience for me in the field of clinical oncology and research. While in Nepal, with limited resources and infrastructure, we practice primitive forms of clinical oncology offering age old treatment options for the cancer patients. This exposure was an eye opener; I realized that much advancement has occurred in the field of cancer management with availability of many advanced forms of treatment modalities and options in recent years. At ICR, the world class cancer research lured and compelled me to think about possibilities of establishing collaboration for cancer research at our centers in Nepal with ICR.

I had rotations to almost all departments of The RMH at London and Sutton. These rotations gave me the

opportunity to interact with world class professors/ oncologists and learn from their expertise and experience. With the highly advanced infrastructure, competent doctors, nurses and other team members, I also observed a high class of patient care and management system. I was very impressed with the data management system, multi-disciplinary teams and communication skills at The RMH/ICR, which were something to replicate at my institute in Nepal.

I am highly indebted to the team members at the RMH including professors, doctors, fellows, nurses, support staff and all the patients/visitors who taught us important aspects of clinical oncology and human behavior. I especially thank Prof. Harrington (Head/ Neck), Prof. Ros Eeles (Prostate/ICR), Prof. Martin (Urogenital/Immunotherapy), Prof. Popput (Lung), Prof. John (Sarcoma), Prof. Tait (gastrointestinal), Prof. O'Brien (lung) and the entire hospital team. On behalf of all four trainees, I would like to thank BNMT, the Britain-Nepal Society Chairman Mr Andy Sparkes, former British Ambassador to Nepal, Mr Richard Morris, and RMH family for this golden opportunity.

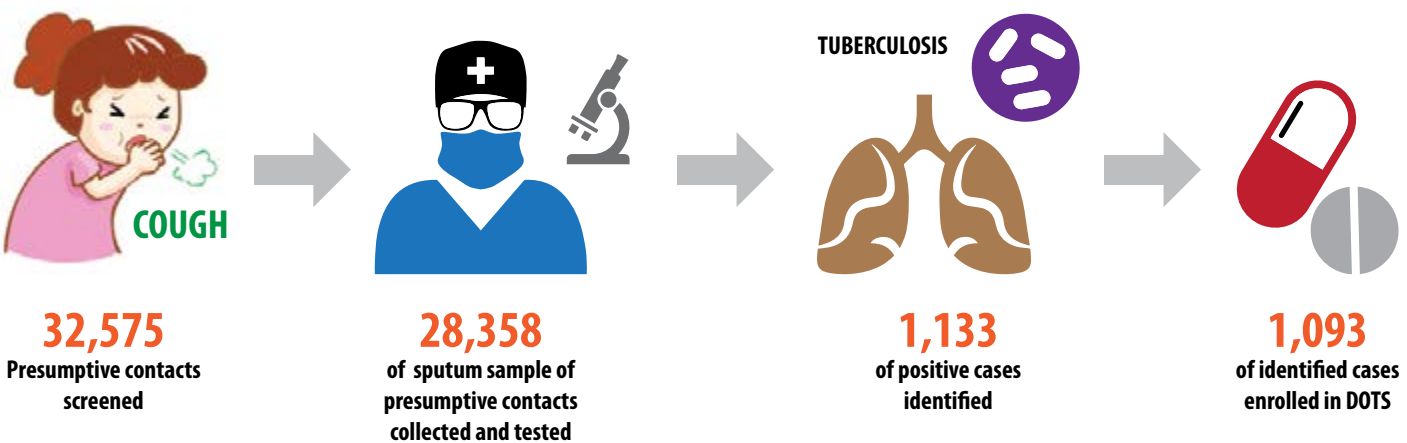
Dr. Sanjay Kumar Thakur, MBBS,MD
Oncology Fellow, NAMS, Bir Hospital

IMPACT TB

www.impacttbproject.org, twitter: @impact_tb



IMPACT TB: ‘Implementing proven community based case finding intervention in Vietnam and Nepal’ is a European Union Horizon2020 funded project to research optimal implementation strategies for scale-up of TB active case finding towards the END-TB target for TB elimination in low and middle income countries . The project is evaluating many aspects of active case finding including staffing models, diagnostic approaches, and health economics from a patient and health system perspective, virtual implementation modeling, national epidemic modeling and translation of research evidence to policy and practice. BNMT is implementing the active case finding strategies for Nepal in four terai districts: Chitwan, Makwanpur, Mahottari and Dhanusha. We have supplied six GeneXpert machines and 10 Olympus microscopes via the project and diagnosed over 1,000 TB cases from the community during two years of active case finding. We have compared the cost to the health system of applying microscopy versus GeneXpert for TB active case finding. Our patient cost surveys have demonstrated that active case finding can significantly reduce the prevalence of catastrophic costs for TB patients in Nepal and contribute to END-TB strategy goal of eliminating catastrophic costs for TB affected households. Our consortium partners for the project include Liverpool School of Tropical Medicine, (UK), Karolinska Institutet, (Sweden), KNCV (Netherlands), and Friends for International TB Relief (Vietnam). We will be publishing our research findings from this project over the next year and hold dissemination events at local district, national and international level.



The Power of Art

To be effective, health messages must be eye-catching and engaging. TB awareness materials in Nepal have not been updated for many years and are uniform throughout the country. To create new interest and brighten up health centres, we explored the idea of using the unique and renowned local art form, Mithila Art, to create new TB awareness murals in Dhanusha and Mahottari districts. This project was initiated by two interns with BNMT, Bikram Bucha and Saurya Dhungel who share their experience below.



Memories with Mithila Art and TB in Dhanusha

We went to Hetauda office of BNMT Nepal as interns to conduct a project of creation and dissemination of Information, Education and Communication (IEC) materials using Mithila art to improve people's knowledge on TB. The objective of the project was to increase knowledge of OPD patients and visitors coming to health facilities where IEC corners would be set. Nervous and excited, we were determined to experience this journey in new place, with new people and culture which in the end offered ample opportunities for learning and wonderful memories.

With evidence from scientific literature, Key Informant Interviews and Focus Group Discussions with community people and TB patients, we developed the IEC materials and conducted a pre and post-test survey among patients and visitors to evaluate the effectiveness of the project. The government stakeholders were very happy. HP in-charge of Dhalkewar said, "The content, painting and art are remarkable. Being a Maithili speaker, it brings joy seeing this art used in TB awareness". The survey result was also impressive. The findings portrayed a 47% increase in knowledge among the respondents who had participated in both pre-test and post-test

survey, which was statistically significant. (p-value < 0.001).

During our stay, we witnessed high level of stigma, discrimination and low awareness on TB. We met an old, thin and malnourished man in a tea café of a village, who was suffering from MDR TB. He had escaped from DR treatment centre multiple times and the locals knew about his illness, but were not able to help him. Also, a women suffering from TB was not willing to get treatment from the health facility and her condition was worsening. We later learned that people often prefer private health facilities in Darbhanga, India for many reasons including stigma and perceived quality of services.

This experience wouldn't have been possible without the continuous support of Hetauda and Dhanusha team. We are highly indebted to the community mobilizers, who rode their bikes all days not only to help us in the project but also to discover the beautiful monuments, culture, religious places and people of Dhanusha that we dearly fell in love with.

Bikram Bucha and Saurya Dhungel
Institute of Medicine (IOM), Kathmandu

Mithila Art: Ancient and Powerful

Mr Bijay Dutta, Mithila Artist, talks about the cultural significance of Mithila Art and his reflections on its application for health education. Here are the excerpts:



How was your experience creating Mithila Art for health messages?

It was the first experience for me to work in the health sector. The use of Mithila Art has developed a lot in recent times; it is gradually taking its space in the government sector, national and international level. Having this art included in any sector is indeed a proud moment for me. And the way its use is being expanded and deepened shows that Mithila art is to here grow and sustain. I really wish it to be used by other sectors as well.

How do you think locals perceive this idea? Can the paintings be influential in the community for spreading TB awareness messages?

This is our local traditional art; it is used at every occasion, and in every home. Using traditional art style for imparting an important message to the local people in their own locality, in their own style is indeed wonderful. I believe it will be very easy for the people here to understand and internalize the message. It has already generated a good amount of curiosity in the local people here. When I was painting, people would stop on their way and watch me, ask me 'what you are doing?', and also give me suggestions on how certain portion should be crafted.

How has the government responded to this?

The government has been supportive and encouraging. I just wish that the use of local artist is encouraged rather than outsourcing from other places.

What do you think about women's empowerment and Mithila Art?

Mithila Art is very close to my heart. I would not want my art and skills to die with me. So I would like to start an organization for teaching others and providing employment in Mithila art. In fact I have already begun the process.

What are the obstacles in this job?

I can't earn a lot from art, the artists do not earn much and middle persons take the profit, so the growth has been constricted. It's my perspective, but others might be facing the same. Also, it is difficult to paint in rainy season!

Healthy and Happy

Lawang Dorje Theeng, 65, lives in Raigaun, a small village 6 hours ride away from Hetauda, Makwanpur. The chicken and buffalo herds are the main source of income for the family of 7 people including 2 grandchildren. It had been more than a year since he was having cough and loss of appetite. He had visited several private health facilities and even government hospital during this time but every time his disease went undiagnosed. He had already spent NRs. 70,000 for the diagnosis and treatment over the period. He was staying at home in a bad condition with loss of hope for treatment and cure. When our volunteer met him he was under the influence of alcohol, coughing day and night and unable to walk. Our volunteer collected his sputum samples in the microscopic camp and found him to be TB positive. He was immediately enrolled in treatment in December 2018. Now, after the regular treatment, he is cured. Our sincere gratitude to the community mobilizers, who counseled the patient about symptoms of TB and reinforced him for sputum testing, TB diagnosis and supported him to complete the treatment.



Understanding the challenges at the field level

Olivia Biermann, PhD Student, Karolinska Institutet

In what have been the most intense and interesting days during my five months in Nepal, we visited the four IMPACT TB districts to conduct a qualitative study of the barriers and facilitators for active tuberculosis case-finding implementation. We interviewed community mobilizers, Female Community Health Volunteers and volunteers working with active case-finding, as well as patients who had been identified through active case-finding. We were interested in the most pertinent implementation issues, how people had found solutions in the past, and how ACF could be implemented in a better way in the future.



We saw how stigma, both TB and caste-related stigma, can be a major barrier for implementing ACF. For example, one volunteer described accompanying a TB patient who was scared of being stigmatized to the treatment center to make sure he was enrolled on treatment and given his medicines. He even provided the patient with his own phone number and encouraged him to call should he face any problems. Through ACF, communities became more aware about the issue of TB. One day, the volunteer received a call from a father who thought his son might have TB. The father asked whether the volunteer could visit their home as he was hesitant to visiting the health facility due to stigma. Stigma is often linked to limited knowledge about TB (another key barrier that came up in the interviews).

Many interesting findings emerged from this study which can help inform future work. This work is crucial to help us understand how to refine our active case-finding models in the future so that we can reach every TB case in the community.

Patient Cost Survey

Bhola Rai, Research Associate, BNMT Nepal

The government of Nepal provides free medicines and basic diagnostic tests for people with TB but patients incur many costs before they know they have TB, and while accessing TB services and care. These include non-medical costs (out of pocket expenditures) such as transportation, nutrition supplements etc. The challenge increases when the main income earner in the family gets infected with TB. Often, the financial burden is severe, and if it exceeds 20% of the annual household income it is termed 'catastrophic cost' in recognition of the long-term consequences for the family. BNMT is conducting TB patient cost survey to compare costs incurred by patients diagnosed through



active and passive case finding. We are measuring the direct medical, non-medical and indirect costs (such as income loss incurred by patients and their households) and quantifying the proportion of TB affected households experiencing catastrophic cost due to TB. The survey was conducted in 200 patients living in the four IMPACT TB districts. Community mobilizers were trained and supported to conduct the survey and in obtaining informed consent from eligible participants. This survey has highlighted the urgent need for improved socioeconomic support for our TB patients and their families in Nepal. It has given us a greater understanding of the causes and consequences of those costs, to help us design an effective intervention to support them, and to draw attention to the need for action among policymakers and activists.

What does it cost to have TB? Can patient-centric care help TB affected families cope financially?

Dr. Noemia Teixeira de Siqueira Filha, Health Economist, Liverpool School of Tropical Medicine, UK



I have been working in partnership with BNMT Nepal since 2017, when I was hired by the LSTM to lead the implementation of the health economics work package of the IMPACT TB project. Since then, I have worked with the BNMT to design the study using the WHO patient costing tool, conduct training on health economics and costing surveys, adapt, translate, pilot and validate the tool for Nepal and to monitor the field work activities and data collection. I also extended this work to BNMT's TB REACH project where team of community mobilisers in each district conducted TB patient interviews to document costs incurred during the pre-treatment and intensive phase of treatment. We wanted to know if active case finding can help reduce patient costs, so we interviewed 50 patients diagnosed by the active case finding programme and 50 patients who were diagnosed by the standard 'passive' government TB Programme. The results show, financial burden of TB on families in Nepal is often very high, relative to their annual incomes. The data shows ACF as an important strategy to reduce the economic burden for TB affected families. Patients diagnosed through Active Case Finding incurred lower costs during the pre-treatment period (medical costs: USD 14 vs USD 32; non-medical costs: USD 3 vs USD 10; time loss: USD 4 vs USD 13) and pre-treatment and intensive treatment phase combined (medical costs: USD 15 vs USD 34; non-medical cost: USD 30 vs USD 54). The prevalence of direct costs was also lower for ACF patients (24% vs 51%, threshold of 20%).

In the IMPACT TB districts, we are applying the same patient costing tool and also evaluating active case finding costs to the health system. It is important that we do not implement a strategy which has a lower cost for the health system but transfers higher costs to the vulnerable patients. We are comparing the costs and yields of implementing active case finding using GeneXpert testing (an advanced molecular diagnostic test) with the traditional low-tech method of smear microscopy. We know smear microscopy is cheaper and therefore more accessible to a country like Nepal, but GeneXpert can find more cases. So what exactly are the differences in cost per case detected? What are the cost drivers and can we reduce them? Which test is the more cost-effective in the long-term? For this work we have also used a novel longitudinal design for the survey, interviewing patients within 2 weeks of diagnosis after completion of the intensive treatment phase (2 months) and finally, at treatment completion (6 months). This will help us understand the type and magnitude of costs at different stages of the journey to cure. The survey finished July 2019 with 250 patients participating (and the analysis will be submitted for publication by the end of 2019). The health system costs analysis shows that the yield of diagnosis was 2.3% (227/9,958) for the microscopy model and 3.6% (418/11,752) for GeneXpert model. The cost per case detected was USD 513 for microscopy and 909 for GeneXpert. However, the yield of diagnosis was 2.3% (227/9,958) for the microscopy model and 3.6% (418/11,752) for GeneXpert model. Importantly this analysis shows that concession to remove tax and import fees for GeneXpert would substantially reduce the costs of ACF using GeneXpert to 681 USD per patient diagnosed. We are now at the final stage of our research and results have been disseminated to the local stakeholders, consortium meetings in Nepal and Vietnam, dissemination seminars in Brazil and scientific conferences around the globe. These findings are being summarised in policy briefs to ensure accessible dissemination to policy makers and stakeholders. As a health economist interested in diseases of poverty, the work in Nepal and BNMT has been a fantastic experience. Can't wait for the next visits and projects!



Community screening in Dhanusha



Cartridge scan by BNMT staff before running the GeneXpert test at a health facility, Dhanusha

GeneXpert implementation in Nepal

GeneXpert is an advanced molecular diagnostic test for TB which is more accurate than other technologies like smear microscopy, the test can also rapidly identify Multi-Drug Resistant TB (MDR TB). The IMPACT TB project installed and utilized six GeneXpert MTB/RIF machines in Chitwan and Dhanusha districts. Using the existing infrastructure and working with the laboratory staff of the health facilities, over a period of two years, the project screened 17,645 individuals for TB, out of which 16,242 sputum samples were collected and tested via GeneXpert. Through this, TB was identified in 728 individuals.

Each GeneXpert center tested 11 samples per day on average with a positivity rate of 4%. The project also identified 23 drug resistant cases with the help of the GeneXpert in the two year period.

The project showed GeneXpert scale-up has a crucial role in achieving the NTP National Strategic Plan of 20,000 additional TB cases by 2020. A strong logistics and maintenance network will be essential to maximize utilization of the machines. This learning will support the National TB Programme to improve the quality of health services and provide a guideline for expansion of diagnostic test facilities as achieving the END TB goals.

The Big Picture: understanding how our active case finding can reduce TB transmission and 'bend the epidemic curve'

TB Analysis and Modelling Consortium

Dr. Sourya Shrestha, Johns Hopkins School of Public Health, USA

The World Health Organization estimates that there were 1.6 million TB related deaths in 2017 – In the 21st century, TB remains the largest source of deaths globally from an infectious source, more than HIV or malaria. Despite the fact that inexpensive and effective drugs are available, we have failed to achieve significant reductions in global TB incidence. This is particularly true of high burden countries like Nepal, where on-going transmission of the TB bacteria, *Mycobacterium tuberculosis*, leads to over 40,000 TB cases each year.

Transmission of TB is airborne, Infectious individuals may exhale or cough bacteria into the air, which can be breathed in by other people. It is believed that individuals with TB disease remain infectious for several months, even years, before they are diagnosed and treated. In order to reduce transmission, it is imperative that we find people sick with TB early, diagnose and treat them immediately. However, when there is a general lack of awareness of TB and health care centers that diagnose TB are not easily accessible, this can lead to delays in individuals seeking diagnosis and treatment. I am working with BNMT to understand and estimate the impact of active case finding in the IMPACT TB districts of Nepal. We are using data on population demography and TB from these districts to build mathematical models of TB transmission at the district level. The models capture the local dynamics of TB epidemics, and can serve as a tool to project how much TB can be prevented in the future with different levels of investment. This can help policymakers understand the long-term implications of addressing

or neglecting the TB epidemic with different policy decisions, and be a tool to advocate for rational allocation of resources to intensify the response.

TB incidence can vary substantially within a district, particularly those with diverse topography and high socioeconomic variation. Some areas of the districts may be further from TB diagnostics centers, leading to patients taking longer to seek medical attention. In high-burden, low resource settings like Nepal, the costs associated with improving or enhancing TB control and care can be a significant deterrent. Being able to design interventions in a strategic manner, by making use of the local data and model-based thinking, is essential.

IMPACT TB Consortium Meeting

All the IMPACT TB consortium partners and collaborators from 8 countries came together for a review meeting in Kathmandu July 2-3, 2019 hosted by BNMT. The meeting reviewed progress and exchanged experience of implementation in Vietnam and Nepal, reviewed the research findings and placed them in national and international context of recent advances in TB science. The partners also outlined priorities for the final 6 months of the programme and plans for synthesis and dissemination of findings to stakeholders and international experts.

IMPACT TB Policy Dialogue

IMPACT TB conducted a Policy Dialogue in Kathmandu, facilitated by Professor Knut Lonroth of the Karolinska Institutet on 4th July 2019. The aim of the dialogue was to involve local stakeholders including policy makers, TB patients, international TB researchers and community health workers to review the evidence generated from IMPACT TB and to discuss the relevance to future policy evolution in Nepal. Three draft policy briefs were created for the meeting, which were refined with input from all stakeholders, and will now be disseminated in both Nepali and English to share the study findings.



Why do we need a support package for TB affected households in Nepal?

Dr. Tom Wingfield, Liverpool School of Tropical Medicine, UK

Kabita Sharma hacks into a handkerchief, coughing up the bloodstained phlegm that plagues her chest in the mornings. Her two-year old twins, Rupak and Rupesh, and baby, Rupa, are awakened by her vicious coughs. As she puts baby Rupa to her breast, Kabita ponders her situation. It's been half a year since her husband Rajan passed away, two months since this horrible cough started, and six days since the doctor told her she had tuberculosis and she started the medicines. Nearly every day since then, Kabita has had to take the hour-long bus ride to the tuberculosis clinic – Rupa in hand – so the nurse can witness her taking the drugs. But Kabita just can't get



to the clinic today. Her neighbour can't look after the twins, and Kabita has no money to pay for the bus. More pressingly, there is no food left to cook, nor fuel to cook with.

Kabita quickly calculates that if she manages to get a few hours work in the field today, that will stop the family going hungry. But it will also mean not arriving at the TB clinic until after it shuts – too late to take her medicines. What would you do? Kabita's situation in a village of Chitwan district of Nepal is unfortunately not new. Kabita's terrible dilemma continues to be faced by many of the 10m people worldwide who will develop tuberculosis this year (1.3m of whom will die). Global TB control strategy has been disproportionately focused on medicines and tests rather than addressing the social causes and circumstances of those with TB. In its 2015 End TB Strategy, the World Health Organisation called for social support and poverty alleviation strategies for TB victims to reduce treatment costs and stigma, empower patients, and increase prevention.

My previous work with the Innovation for Health and Development team, in slums north of Lima, Peru, showed that many households incur catastrophic costs of accessing "free" TB care. We found that patients that incurred these costs were more likely to die, have treatment failure, or drop out of treatment. We developed an integrated socio economic support package consisting of educational interactive workshops and support groups led by ex-patients to reduce stigma, cash transfers to mitigate TB-associated costs, and enable exposed household members to be screened for TB. The intervention was a success; supported TB patients were significantly more likely to complete their treatment or be cured, and their children were more likely to take TB medications. Would a similar approach work in other settings?

Funded by the Wellcome Trust, we are conducting a study in the IMPACT-TB districts to understand the most appropriate socioeconomic interventions for TB-affected households. We are measuring social factors of TB-affected households, including TB-related knowledge, stigma, social capital, wellbeing, and economic factors. We are also conducting, semi-structured focus group discussions, and a two-day national workshop with key stakeholders in Nepal to understand how our findings relate to national policy and practice, planned for September 2019.

This workshop will aim to create a shortlist of socioeconomic support interventions to test with an intervention trial in Nepal. Helping households affected by TB, like Kabita's, to avoid further impoverishment and providing them with moral support, can enhance TB care and support the End TB Strategy goal of eliminating the disease by 2050. We hope that this project - a continuation of BNMT's efforts to support the Nepali population over the last 50 years - will be one of the steps towards that goal.



Onsite coaching for GeneXpert Sputum preparation in Dhanusha



Slide examination using new microscope provided by BNMT

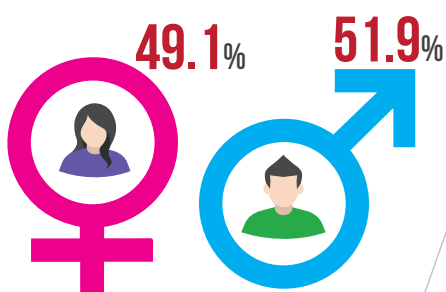
ADVANCING SEXUAL & REPRODUCTIVE HEALTH & RIGHTS OF ADOLESCENTS OF EARTHQUAKE AFFECTED VILLAGES OF SINDHUPALCHOWK, NEPAL



Comprehensive Sexual Reproductive Health Rights (SRHR) is an essential component of any healthy society. BNMT works for a Nepal where everyone has a healthy, happy and fulfilling life. In many communities of Nepal, open discussion and access to information on sexual issues, particularly for adolescents, is still restricted by conservative traditions and attitudes. To break taboos and change social norms, dialogue and advocacy across divides is essential.

Advancing SRHR of Adolescent of earthquake affected villages of Sindhupalchowk, Nepal: a pilot project (MJNE-3BX8-ML) supported by Amplify change, is designed to improve the sexual health of young people by increasing their knowledge on aspects of SRHR and advocating for their rights. It is being implemented in Ward no. 2, 3, 5, 6, 7 and 8 of Indrawati Rural Municipality, Sindhupalchowk since March 2019. The duration of the project is 18 months.

Sindhupalchowk SRHR Overview



Adolescent Population:
71,039



CHILD MARRIAGE



72.41% of married female & **47.1%** male report they married before the age of **20**.



VIOLENCE AGAINST WOMEN AND GIRLS

112 cases reported to District Police Office following 2015 earthquake

3,570
Deaths in Earthquake



Source: CBS 2011 and UN women 2016

Essence of the Sexual and Reproductive Health and Rights project

In this project, BNMT Nepal is strengthening the capacity of three local Civil Society Organizations at Sindhupalchowk to advocate for SRHR as basic human rights, build SRHR movement by generating new evidences and synthesize existing evidences at sub national level for sustainability beyond the project. An important aspect of the project is to improve knowledge and awareness of teachers, students and parents on SRHR including Comprehensive Sexuality Education (CSE) and linkages of SRHR with mental health, improve communication between parents and adolescents on SRHR and increase engagement among stakeholders to advocate for it by changing social norms.



While existing data indicates poor sexual and reproductive health status of adolescents in the district; the health workers, teachers, local leaders, and community people of the Indrawati Municipality report child marriages, teenage pregnancies, mental and psychosocial problems among school children, sexual abuse and violence as the major challenges that need to be addressed. What is most required is the support, ownership, contribution and effort from each stakeholders, rising above hidden personal and political agendas, to challenge the existing harmful social and gender norms and practices; to promote, protect and ensure sexual and reproductive health and rights of adolescents and young people and to advocate SRHR as basic human rights. Only then improvement in sexual and reproductive health of adolescents and young people at household level to the community and subnational level can be realized.

Bikram Bucha, District Project Coordinator, Sindhupalchowk

Community Speaks

“There is increasing trend of school dropout rate, adolescent marriage of school children from schools, teenage pregnancy, early start of menstruation in girls and lack of menstrual hygiene management awareness in the communities. This project is going to raise awareness on issues relating to SRHR and strengthen local CSOs for advocating on SRHR in the communities. We are thankful to BNMT for implementing the project here.”

Mr. Bansha Lal Tamang, Chairperson, Indrawati Rural Municipality

“In Sindhupalchowk, health services are not accessible due to difficult geographical terrain. People walk for hours to reach the nearest health facility. We can imagine what it takes for disadvantaged groups especially women to get health services. There are cases of uterine prolapse, and many other reproductive health problems in women/girls and men/adolescent boys. Community awareness on SRHR is very crucial to seek the services provided by the government. BNMT working in this municipality to raise awareness on SRHR and ASRH is indeed praiseworthy.”

Dr. Pomawati Thapa, Chief, DHO, Sindhupalchowk

“Many cases of rape and sexual violence in Sindhupalchowk are not reported. A school girl was accompanied by her friend to Nawalpur hospital because she fell sick in the class. During the history taking and counseling, we were shocked to know that she had been raped by her close relative and she was reluctant to report the case and accepted it to be consensual.” We were helpless, couldn’t provide any kind of support.

Health workers, Nawalpur Hospital

“We heartily accept and warmly welcome this project to be implemented in our school with open hands. BNMT has already implemented psychosocial support programme in our school after the earthquake and we are highly indebted to them. We feel SRHR awareness is needed for our students and the communities they belong.”

Madhav Sapkota, Principal, Shree Rajeshwori Ma.Bi., Sipapokhare, Indrawati Rural Municipality



‘SRHR training to local Civil Society Organizations

DRONE OPTIMISED THERAPY SYSTEM (DROTS) NEPAL: CAN WE OVERCOME NEPAL'S TRANSPORT CHALLENGES WITH DRONES TO REACH THE REMOTEST COMMUNITIES?

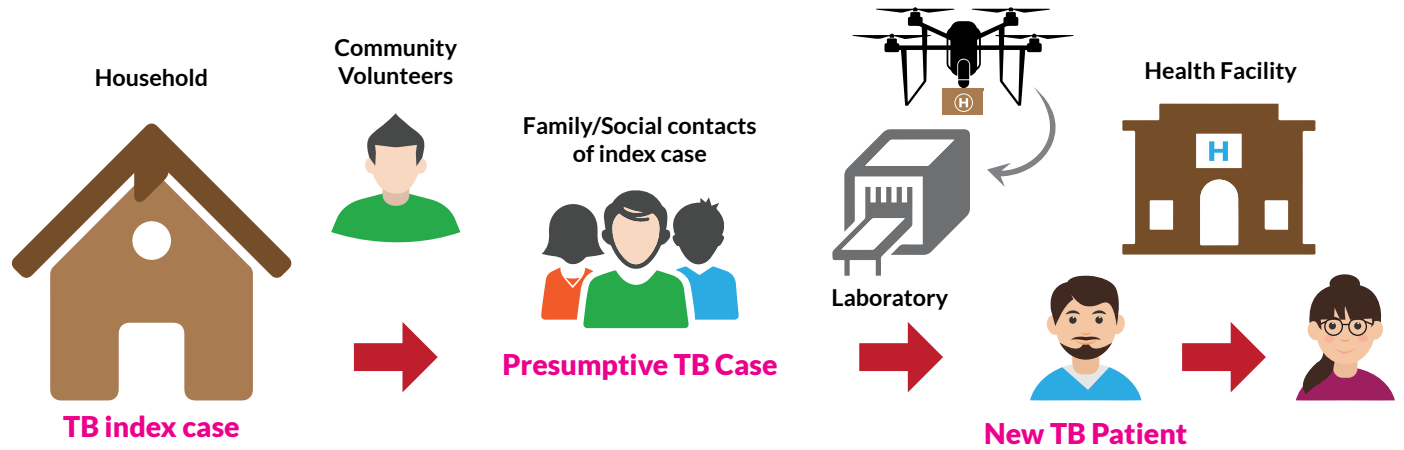


Drone flying to the Health post to deliver medical sample

Drone technology is advancing rapidly. In 1990, it would have been hard to imagine that mobile phones and Internet technology would completely transform society within 30 years and become ubiquitous, even in the least developed corners of the world. Today, drones, or unmanned aerial Vehicles are being tested for many different applications, from Amazon package deliveries to malarial risk mapping.

In rural Nepal, the biggest challenge for healthcare delivery is the lack of an effective transport infrastructure. Healthcare workers or patients often walk for many hours to reach services and essential supplies are often out of stock. What if a drone could zip across a valley in the hills and deliver a sample or a medicine in minutes, instead of hours? BNMT is piloting the application of drones in TB service delivery using a 'hub and spoke' model to network health posts to GeneXpert testing centres. If the drone network can be successfully established there are many more potential applications such as delivering ante venom for snakebite victims or emergency magnesium sulphate/TIA to birthing centres to save women from dying in childbirth. The potential for such a network is immense, but there are many challenges to set up the network. BNMT is working with the National TB Centre and drone experts at Nepal Flying Labs, WeRobotics, Switzerland, Liverpool School of Tropical Medicine and Stony Brook University, USA, to develop a pilot drone network in Pyuthan district and establish a road map for scale-up to other districts of Nepal.

DrOTS Nepal (Drone Optimised Therapy System) is designed for the early and rapid diagnosis of new TB cases in Pyuthan through the utilization of- drones and smart pillboxes, to support overcoming the access barrier in remote geographically isolated areas and improve treatment adherence/patient compliance. The drones collect sputum samples of people with TB symptoms and fly them to the laboratory of the district hospital and Primary Health Care Centre (PHC) in Bhingri for GeneXpert testing. If the samples are positive, the project is also using smart pill boxes to make the six month TB treatment easier for the patient. These innovative pillboxes remind the patient to take the drugs every day, and keep an electronic record of each dose taken that can be reviewed by a healthcare worker. This removes the need for the patient to attend the TB clinic daily for direct observation, which is very difficult in remote areas.



Community volunteers visit houses of index TB patient, screen their contacts, collect sputum samples of presumptive TB cases (among contacts) and provide it at the nearest health facility

Drones carry the sputum samples from the health facility to laboratory which are then tested in GeneXpert

If the diagnosis results indicate for TB patients are referred to the nearest DOTS center for treatment

Taking Flight to END TB

Shraddha Acharya

It has been a privilege to work with BNMT as a District Program Coordinator in Pyuthan district. Starting my journey with BNMT as an intern during my undergraduate study and later joining the team as full-time staff, I have been so fortunate to be part of one of the leading non-profits in the country, especially in the area of tuberculosis, and to learn from best expertise in this field through two projects, TB REACH wave 5 and DrOTS Nepal.

Stepping onto the first ladder of my career as an amateur young professional, in a remote hilly region, distant from my home, work could have brought its own share of difficulties and fear. But the support I received from BNMT and the Health Office in Pyuthan enabled me to achieve success from the beginning. Working in a hilly district had challenges like limited number of diagnostic centers and the several geographical barriers made it arduous for our community mobilisers and volunteers in contact tracing and sputum transportation. However, TB REACH Wave-5 successfully notified 224 new pulmonary bacteriologically confirmed cases from Pyuthan. As a result, 27% additionality in TB case notification was observed by the district in National TB Programme during fiscal year 2074/75 compared to the last fiscal year. With the lessons learnt from TB REACH, we started DrOTS project to facilitate active case finding activities using drones for transporting sputum samples from health facilities to TB diagnostic centres and GeneXpert sites in the district. Through DrOTS, a globally innovative project, BNMT has applied



technology and innovation in tuberculosis control. The support and appreciation received from governmental/non-governmental sectors and communities for DrOTS has given more confidence and leverage to our team to achieve a path-breaking success in future. With many districts like Pyuthan, inaccessibility in seeking and receiving care due to geographical barrier, stigma in the community that comes along with tuberculosis, discontinuation of treatment care among the patients and the lack of sufficient socio-economic support schemes for the patients and their families are challenges we would like to solve. I would like to extend my gratitude to BNMT, district hospital team, community mobilisers, volunteers, and the stakeholders for helping me bring the best of me in this shared goal of eliminating tuberculosis in Nepal and providing beautiful memories which I shall cherish for the rest of my life.

Shraddha Acharya has been awarded a highly competitive international MSc scholarship from TDR, and will begin her studies in Indonesia in June 2019- Congratulations from all at BNMT!

Drones, smart pillboxes, AI, telemedicine, etc... why I'm a techno-optimist when it comes to "leapfrogging" technologies in public health

Dr Joe Brew, Stony Brook University

Innovative technologies are taking off around the world and low-income countries are leading the way. And they're leading the way not despite the challenges of development, but because of those challenges. The marginal value of adopting a new technology is highest when the infrastructure of the "old" technology doesn't exist. For example, there are 125 cell phone subscriptions in Nepal for every 100 Nepali people. Nepal leapfrogged" landlines straight into cell phones.



"Leapfrogging" is the concept of radical innovation replacing incremental progress. African society "leapfrogged" traditional banks and went straight to mobile money. Indian clinics "leapfrogged" staffed health posts by setting up telemedicine centers.

BNMT has established Nepal's first ever public health drone program, and one of the world's first programs to use drones for systematic bi-directional transport. If the program goes well, it will help healthcare workers to find, diagnose and correctly treat more patients in the most remote communities.

DrOTS is a "moonshot" program; for the idea is so new and unexplored it's difficult to quantify the likelihood of "success". Will the drones withstand Nepali weather conditions? Will the community accept and embrace new technologies? We don't know the answer, but what we do know is the tuberculosis epidemic in Nepal is a public health emergency. "Leapfrogging" is not just about the technology - it's about a change in mindset, openness to innovation, and an embracing of learning through experimentation.

Technological advances hold huge potential that can be harnessed for public health. Employing the most innovative technologies is not easy, but the stakes are too high to not try. Many ask if developing countries can afford to use innovative technologies for public health, but the more pertinent question remains: what is the cost of not using innovative technologies?

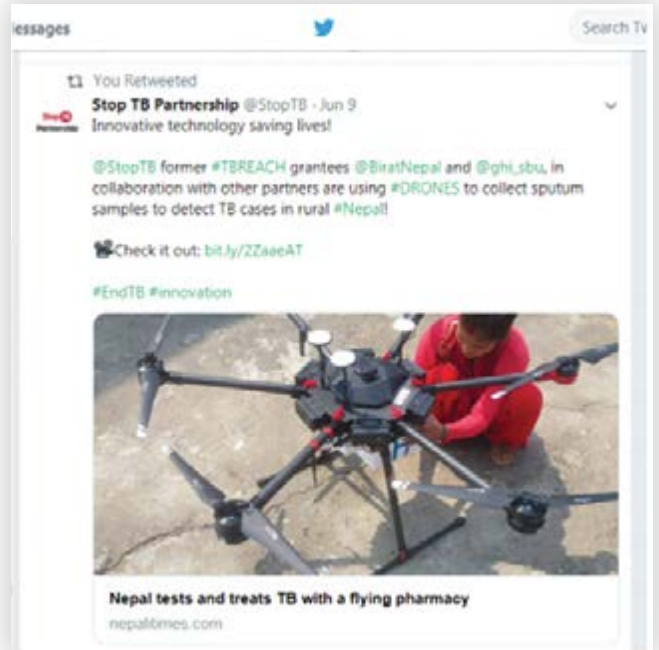
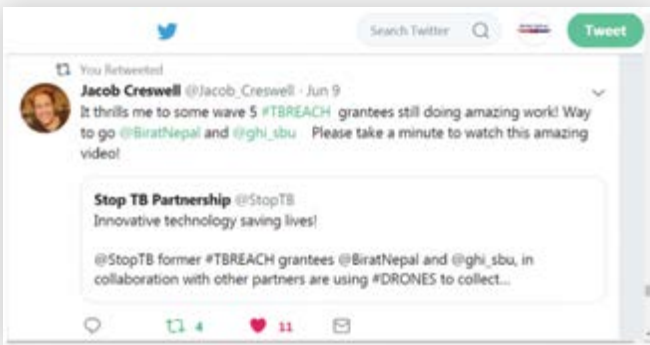


Drone arriving in its port with sputum container



DrOTS project review with FCHVs

BNMT IN THE MEDIA



Published 2019-07-05 09:45 | Updated 2019-07-22 16:05

Karolinska Institutet

IMPACT TB consortium meeting about collaboration, exchange and knowledge translation to end tuberculosis

As part of the EU Horizon 2020 funded project IMPACT TB, Knut Lönnroth, Olivia Biermann and Kerri Viney from the Department of Public Health participated in the IMPACT TB consortium meeting and policy dialogue in Kathmandu, Nepal.

IMPACT TB is a project to find and treat cases of tuberculosis (TB) in communities in both Nepal and Vietnam. Karolinska Institutet's stake in the project is dissemination of research findings and knowledge translation. During the consortium meeting on July 3-4, all project partners presented (preliminary) results from their work which ranged from

Drones trialled to assist in TB diagnosis in Nepal

NEWS ARTICLE 3 JUL 2019

LSTM

To alleviate the problem, the BNMT Nepal and the team have been working with the Government of Nepal, the National Tuberculosis Programme and the network of Female Community Health volunteers to screen communities and find TB cases. However, a huge amount of time is spent transporting samples for testing, something that the use of drones could greatly reduce.

The trial will take place in Pyuthan district, linking remote health posts by 'on demand' drone flights to two laboratories with the advanced molecular diagnostic TB test, GeneXpert. Dr Caws continued: Community volunteers will identify potential patients, requesting the drone to take samples for testing. This network will make the job of volunteers easier and patients in remote areas to access better and more convenient care. If the trial is successful will establish a scale-up model across other districts to help Nepal reach the goals of the END TB strategy and 'leave no-one behind'.

समाचार

ड्रोनबाटै खकार नमुना

जेठ २१, २०१९ | सिद्धार्थ शम्शरी

प्यूठान — स्वास्थ्य चौकीदेखि घर टाढा छ । स्वास्थ्य जँटाउन लैजानै मान्छे छैन । हिँड्न गर्न सकिँदैन । अब यस्ता समस्या हुँदैन! स्वास्थ्य परीक्षण नरोकिने भएको छ । प्यूठानमा ड्रोनले खकारको नमुना स्वास्थ्य संस्थालम्म पुर्याउछ ।

स्वास्थ्य तथा जनसंख्या मन्त्रालयका प्रवक्ता महेन्द्रप्रसाद श्रेष्ठले आइतबार प्यूठान नगरपालिका-४, बिजुवारबाट ड्रोन उडाएर नमुना संकलन कार्यको सुरुआत गरेको छन् । बिजुवारबाट उडेको ड्रोनले १० मिनेटमा प्यूठान

Nepal tests and treats TB with a flying pharmacy

Health Science in Pyuthan June 7, 2019

Times

Latest

Adventures in Robert Macfarlane's 'The World and I' by David Shields and Shane Smith

Orkutell me Everest 2019 August, 2019 Damien Francois

A One look of Thailand 25th August, 2019 David H.C.

Nepal's folk songs come beyond four walls here 28th August, 2019 David H.C.

JAMES KAR BURTENS 29th August, 2019 E-Story

My Street East 29th August, 2019 Sarah FitzGerald

Kathmandu to live International education conference 29th August, 2019 Social Times

Problem: Some 70% of Nepalis are carriers of the tuberculosis bacterium and many of them have full blown versions of the disease. Although diagnosis and treatment is available, the sick cannot travel to hospitals. How to test the spread of germs, and deliver antibiotics in remote and road-less parts of Nepal?

Solution: By drone.

Nepal has been criticised for its directly observed treatment short course (DOTS) for treating tuberculosis, which demands a combination of antibiotics that are administered under supervision. However, TB is difficult to diagnose and treat in remote parts of this country.



अब क्षयरोगको खकार ड्रोनमा ! नेपालकै पहिलो मेडिकल ड्रोन क्षयरोग कार्यक्रममा !



स्वास्थ्यचौकीदेखि घर टाढा छ । स्वास्थ्य जँचाउन लैजाने मान्छे छैन । हिँडुल गर्न सकिँदैन । अब यस्ता समस्या हुँदैमा क्षयरोग परीक्षण नरोकिने भएको छ । प्यूठानमा ड्रोनले खकारको नमुना स्वास्थ्य संस्थासम्म पुऱ्याउँछ ।

The BNMT team had great fun playing Holi together this year in the town of Hetauda while also using the occasion to draw attention to TB in Nepal by painting our Kurtas with the message “END TB”. The event attracted a lot of attention and was reported in both regional and newspapers, including the leading English language paper, The Nepali Times. Other articles highlighting the work of BNMT in the Nepali Times this year included, ‘For Nepal, a game-changer in TB control - *The Comstock Method*’ and ‘*Gene Xpert can help reduce tuberculosis in South Asia*’.



Our efforts were recognised by Stop TB and the picture of our Holi festival event was also included in a compilation video of World TB day events from around the globe released by the WHO STOP TB partnership.

Video Link: <https://spark.adobe.com/page/6YNzVqH5nkuCy/>



REACHING THE UNREACHED: STRENGTHENING TB DIAGNOSIS IN WESTERN NEPAL - TB REACH WAVE -5



Sputum sample preparation in Kapilvastu microscopic camp

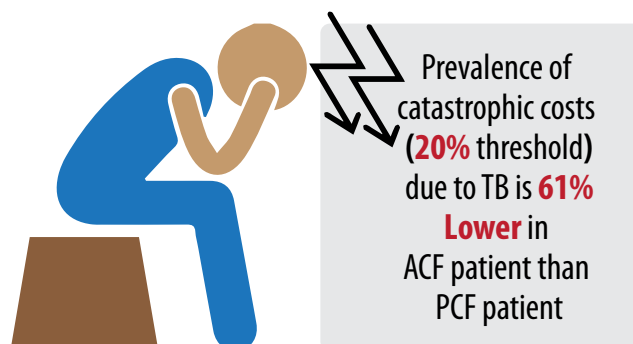
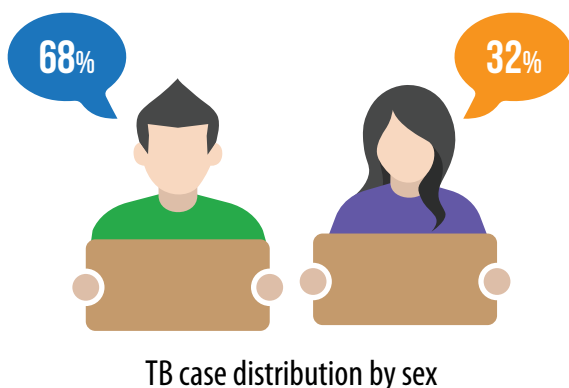
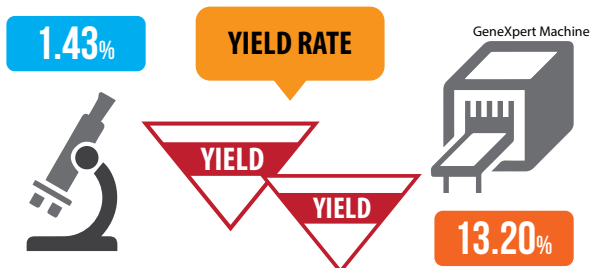
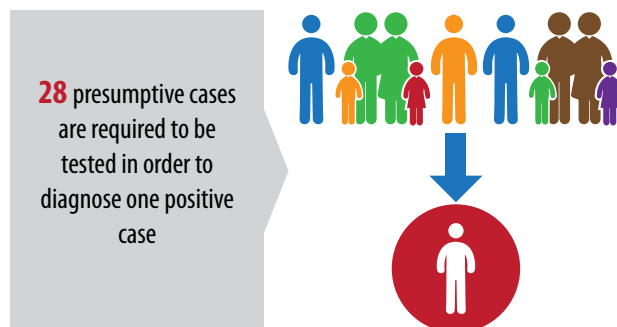
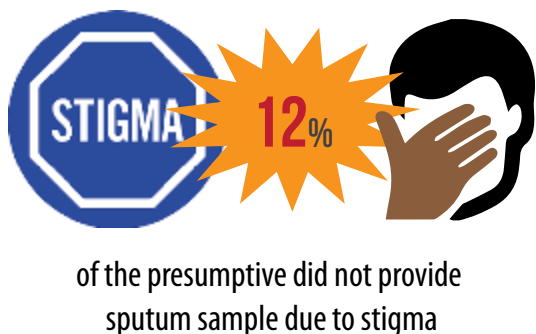
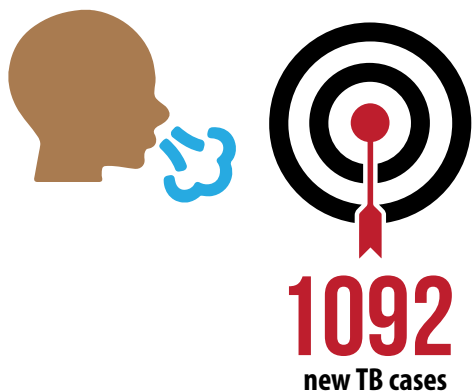
The TB REACH Wave -5 project involved active TB case finding in hard to reach communities with the mobilization of the network of Female Community Health Volunteers (FCHVs) using three major strategies i.e. contact tracing; microscopic camps; and GeneXpert installation in four Nick Simons Institute (NSI) supported district government hospitals. The project operated in eight districts i.e. Achham, Arghakhanchi, Bardiya, Doti, Gulmi, Kapilvastu, Pyuthan and Salyan.

Integrated with the National TB Program, the project was executed in close coordination with the Ministry of Health and Population and district stakeholders with the partnership of Nick Simons Institute. The main essence was to capture the missing, unreported cases by increasing the service accessibility in high risk disadvantaged communities through direct screening, early diagnosis and support to the affected people with the necessary counselling, care and support for treatment adherence.

Having a target of 1090, the project successfully identified 1092 additional TB cases, enrolled 1061 cases for treatment and completed treatment of 631 cases to date (remaining cases still on treatment). Contact tracing identified 441 cases, microscopic camps diagnosed 85 cases and the remaining 566 were diagnosed from GeneXpert testing. GeneXpert testing at OPDs identified 51.8% of the total cases. Thus, one of the major achievements of the project has been utilization of GeneXpert machines for TB testing that generated a yield rate of 13.2%; which is far higher than that of microscopy i.e. 1.4%. This demonstrates GeneXpert as an effective strategy for early case detection in rural district hospital out-patient departments in Nepal. Preliminary analysis shows the project successfully contributed 12% increment (all forms) in the NTP data of the project districts in the current fiscal year as compared to the previous year.

The project also evaluated the health economic implications of active case finding through patient costs survey using the WHO costing tool, conducted in collaboration with the Liverpool School of Tropical Medicine, in two project districts. The study showed that the prevalence of catastrophic direct costs (20% threshold) due to TB was 61% lower for ACF patients compared to the PCF patients. This shows ACF is an important strategy to ameliorate catastrophic costs in TB affected households but other supportive socioeconomic interventions are also required. BNMT is working in consultation with stakeholders to develop locally applicable support strategies for trial in Nepal.

Snapshot of TB REACH wave 5 project result



Microscopic camp in hard to reach areas



BNMT volunteer keeping record of sputum sample collected -Pyuthan

The major **recommendations** of the project include

- Use of GeneXpert as the primary diagnostic tool for early case detection,
- Development of social protection policy in combination with ACF for mitigating financial burden of TB,
- Strengthening of laboratories in microscopy centres for improving the quality of TB testing through microscopy, and
- Longer duration ACF implementation projects to build TB-skilled workforce in hard to reach communities.

Strengthening Health Facilities

TB Scientist, Professor Andy Ramsay, working with BNMT Nepal supported strengthening of the peripheral health facility laboratories in project districts, in collaboration with the National TB centre, which significantly improved the quality of microscopy to detect TB bacilli.

For example, in Bardiya district, one of the microscopes in a laboratory had detected 1+positive smear result initially. However, after its repair, it showed a significant 3+positive smear result for the same slide. This strengthening of TB services will continue to benefit the communities and healthcare workers beyond the TB REACH project.



A dedicated effort to save a life!

Ram (name changed), worked in Kathmandu. In 2016, he returned to his hometown, a remote village in Gulmi district, to visit his parents and three brothers. He was coughing for over two weeks and constantly losing weight, so his mother took him to a nearby health post, however, they had difficulty diagnosing his exact condition. One of our volunteers, Ms Gita Bhandari was also at the health post assisting a very elderly ill person. Ms Gita suspected Ram of having TB. She realised his mother was very stressed as her son's illness had not been diagnosed yet, so she recommended them to test for TB, which came out as positive. However, Ram who was only 15 years old, felt stigmatised; he was afraid of his condition being known in public and threatened to kill himself if anyone found out. He actually attempted suicide but was luckily saved by his mother and Ms Gita. He also refused to go to the health post to take medicine. Gita made a promise to Ram that she would bring his medicine to his house every day without letting anyone know. She kept her promise by taking deserted pathways and changing her routes to avoid being seen, even sometimes at great inconvenience to her.

Whilst at his home, she would counsel him, consistently and carefully assuring him that he would be alright after the treatment, giving him constant hope. She did this for the six months of Ram's treatment. After completing the treatment, they returned to the health post and no trace of the disease was found. Gita's care and constant support made Ram feel empowered and also gave him the courage to become vocal about his condition. He also began helping people through their treatment and teaching people that TB can be cured by regularly taking medication and having a healthy diet.

We would like to thank Ms. Gita and all our volunteers for working days and nights with such motivation, enthusiasm and patience in the diagnosis and treatment of the people with TB.



DELIVERING THE NATIONAL TUBERCULOSIS PROGRAM IN PARTNERSHIP FOR PROGRESS

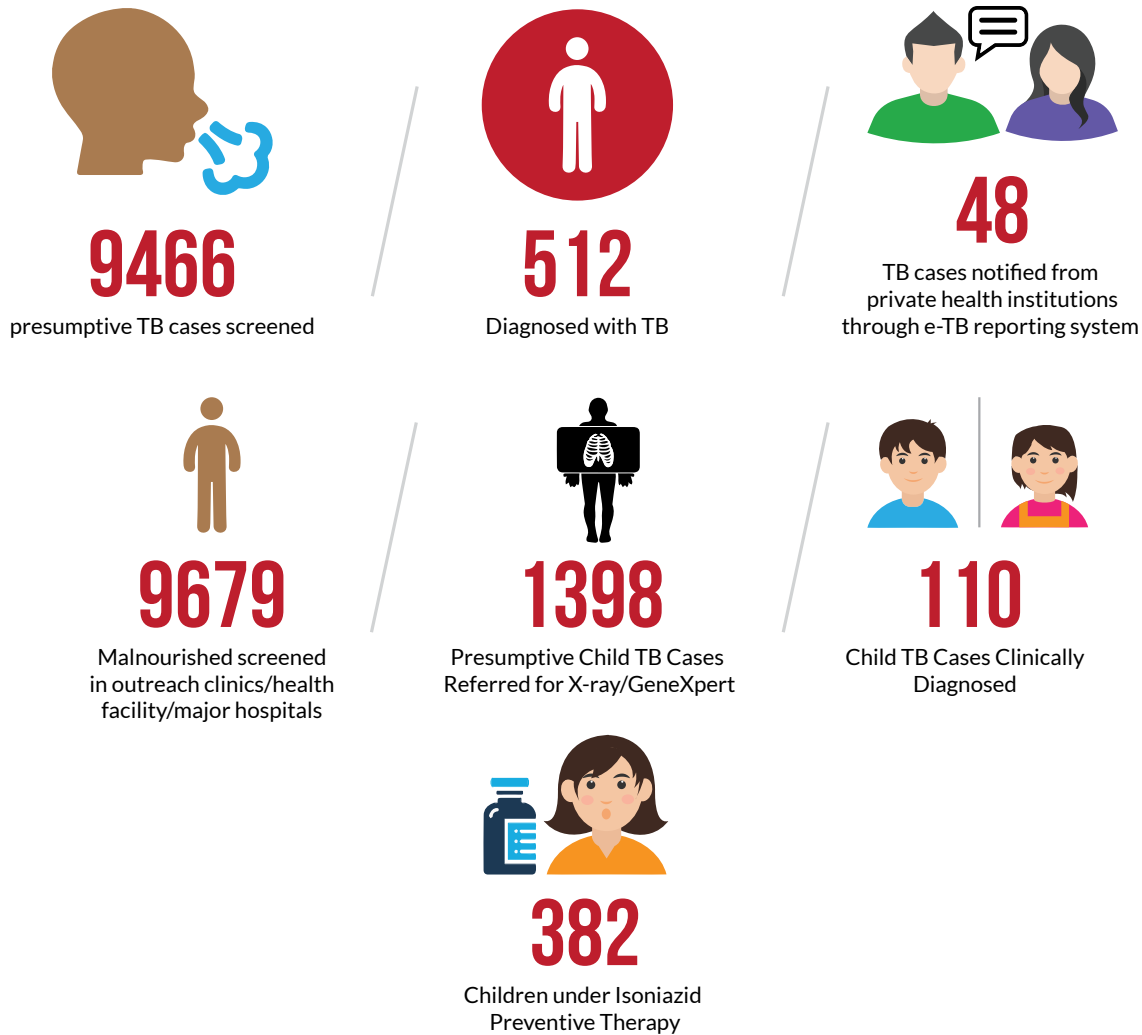


TB screening at rural community by outreach worker (ORW), Aamgachhi, Morang

National Tuberculosis Program funded by Global fund via Principal recipient Save the Children is a nationwide tuberculosis project that aims to reduce TB incidence by 20% and increase case notifications by a cumulative total of 20,000 by 2021. BNMT is working in partnership with Save the Children, NTC and the government health system as a sub-recipient from July 2018 to June 2019 to deliver services in 5 districts of the Province 1, Nepal. The project focuses on increasing case notification through

- Establishing reliable sputum transportation from DOTS centers to microscopic/GeneXpert centers
- Child TB case detection with gastric lavage, sample transportation and TB screening among malnourished children
- Mandatory household contact tracing
- Public Private Mix to increase quality care and notification for TB in the private health system
- TB awareness raising and advocacy in communities
- Strengthening the referral system between HIV Testing Center (HTC) and DOTS





Amila's story



Amila Sharma is a social mobilizer for the National TB program at the Budh Nagar Health Post in the Jahada Rural Municipality near the Indian border. Sharma is a qualified Community Medicine Assistant. She was selected as a Contact Tracer and Courier for the TB program for being dedicated and knowledgeable about health and the local area.

She would visit patient's homes with a collection container to get sputum samples. However, overcome reluctance from the patients she often had to make multiple visits to the same house. She frequently provides individual support to help patients successfully complete the long treatment by visiting their homes and observing the challenges they face. Patients are only given a one month supply of medication, so she also phones patients if they haven't visited the health facility recently. Sharma believes this reluctance was due to a lack of education about TB: many

assumed that haemoptysis (coughing up blood) was the only symptom, as well as if tests done previously by people known to them had negative results for TB; they assumed they did not have TB either. However, Sharma continued to counsel them to convince them to give samples for TB screening.

Community members have often shown little to no respect for the importance of her job, dismissing the hard work she puts in to ensure the treatment of patients. A large stigma still exists towards the disease. Sharma expressed, "I request them to stop having negative thoughts. It is like any other disease: it will be cured by timely treatment and medication. It is contagious by droplet infection: people need to be aware and those with immature immune systems are more likely to contract it. I demonstrate examples of local people who take the medicine and are completely cured." Sharma cannot stress enough how vital creating awareness on TB is in Nepali communities for many are not aware of its consequences.

Capacity building of BNMT staff

This year BNMT has conducted an internal capacity strengthening programme of training among staff and stakeholders. We have hosted a number of training programs at BNMT facilitated by international experts, and also sent delegates to participate in international courses. Topics strengthened include human resource management, project management, strategic financial planning, writing winning proposals and data analysis in research.

Qualitative Research Methodology Workshop with Karolinska Institutet

Qualitative Research Methodology Training was conducted by BNMT Nepal in Kathmandu from February 5-7, 2019. The training was facilitated by Dr Kristi Sidney Annerstedt from Karolinska Institutet, Sweden, one our IMPACT TB consortium partners. The training included sessions on overview of Qualitative research, methods of qualitative data collection, designing topic guide for data collection, Framework analysis and different approaches to manage the data analysis. The participants included staff of BNMT Nepal and Oxford University Clinical Research Unit (OUCRU) - Nepal. A total of 17 participants benefitted from the training.



I had the opportunity to spend time with the BNMT team this past February while conducting a workshop on qualitative methods. While there were a few attendees who had previous experience in qualitative methods, for most it was a new topic. As a teacher, it can be challenging when the group has a wide range of experiences. However, from the first lecture the team was engaged and ready to learn! I especially appreciated their preparedness, timeliness and dedication over the three days. Considering they all have full-time jobs with heavy workloads that do not magically disappear during a workshop, this was even more appreciated.

The team's preparedness allowed us to have richer discussions right from the beginning. Through thoughtful questions and practical examples, the team demonstrated their understanding of the qualitative methodologies taught. In my opinion, the workshop was incredibly successful! I look forward to seeing how they implement the different qualitative approaches they learned in their own work. While it was my first visit to Nepal, the warmth, generosity and thirst for knowledge from the team ensured it will not be my last!

Dr. Kristi Sidney Annerstedt, Karolinska Institutet

Training on R software

R is an open-access software for statistical analysis widely used in scientific research. This training was conducted by BNMT Nepal in Kathmandu from 20-24 May 2019. The training was facilitated by Dr. Jens Levy from KNCV Tuberculosis Foundation, Netherlands, one of our IMPACT TB consortium. The training included sessions on introduction and importance of R, data structures in R, data importing, programming and visualization, data transformation, data modelling and R markdown. The participants included staff of BNMT Nepal, Oxford University Clinical Research Unit (OUCRU) - Nepal, Genetup NATA and Tribhuvan University. A total of 22 participants benefitted from the training.



R for data science in Nepal

Dr Jens Levy

In May 2019, I lead a workshop titled “Learn R” hosted by BNMT in Kathmandu, Nepal. The course was motivated by the unique opportunities for anyone to become a data scientist, for currently, in the global marketplace, there is an abundance of data, but not enough qualified data scientists.

I am enthusiastic about sharing my understanding of data science and R, for I expect great discoveries to come out of prominent bright individuals. In the hands of such people, R is powerful.

R is both a scripting language and software. Importantly, R is free, open source software that allows a global community to contribute to its development. R has almost every tool a data scientist might need to manipulate and evaluate data. As demonstrated during the workshop, one can use R through an Integrated Development Environment that has many convenient tools. I hope this workshop was beginning of the formation of a cooperative data science community that will promote the growth of Nepalese contributions to the solution of the world’s health problems using data.



Communication and leadership workshop

Rob Hale, Executive Performance Coach

Whilst planning my second workshop with BNMT, our intention was to build on last years’ work and focus on Effective Communication, Emotional Intelligence, Trust and Leadership. Bringing together the whole organisation was a good opportunity to demonstrate how building relationships within the workplace is important for success and stems from the ability to understand and practice elements of good communication. It is my opinion that most cases of maladaptive communication tend to be a lack of awareness on how actions might affect others rather than being deliberate. Considering the feelings of our colleagues will create a more positive working environment.

Components of the workshop

As nowadays most communication is via email, evaluating styles of written communication and the effects they may have, was a useful reminder of how small changes can give the receiver enhanced clarity and benevolence. Focusing on specific roles within the management structure and the value they bring, allowed a more comprehensive understanding of the rationale behind the management structure. It was also helpful to consider what additional roles may enhance future development. Becoming familiar with the 5 pillars of the organization for both consolidating and extending the work of BNMT: recognising its strengths and building on them to support new areas of work. Through discussion it was clear that it was easy to be guided by bias without even knowing it. What stereotypes do we strengthen when we judge people on our assumptions rather than the facts? How can we encourage our curiosity and open minds rather than our closed pre-judgements? The future will be shaped by the commitment and development of each staff member. Spending time identifying what people want in terms of professional development alongside what they want for BNMT provided a guide towards creating the future. BNMT is determined to be a trusted organization that communicates well, has a supportive internal staff culture, appreciates the value people bring and strives to be fair.



And how did BNMT make me feel as a visitor? Welcome, relaxed, supported, appreciated and joyful, just to name a few of the feelings I experienced in my interactions with the individuals or groups.

World TB Day 24th March 2019

This year BNMT Nepal commemorated World TB Day 2019 in central and district level conducting various activities with active media engagement in coordination with the government. For promoting TB awareness BNMT distributed T-shirts having the slogan, “Its time to BEAT TB”. At the central level, BNMT supported press conference organized by National Tuberculosis Center (NTC) and placed stall at NTC premises. The stall displayed the work of BNMT in tuberculosis control and prompted many stimulating discussions with attendees and students representing the next generation of health workers in Nepal. In IMPACT TB project districts, BNMT supported and participated in events organized by the government and conducted mass rallies; painting competition in schools and colleges; TB awareness wall painting in health facilities using Mithila Art; handover of 10 microscopes in Dhanusha, Mahottari, Makwanpur, Chitwan and Pyuthan; talk program in local FM and presentations programs.



Microscope handover in Chitwan (left) and BNMT stall at NTC on World TB Day 2019

Active case finding health economic evaluation presentation in National Summit of Health and Population Scientists in Nepal

BNMT Nepal was honoured to attend the 5th National Summit of Health and Population Scientists in Nepal organized by Nepal Health Research Council (NHRC) from 10-12 April 2019. On behalf of the organization, one of the project managers, Ms. Kritika Dixit presented on “Is active case finding an effective strategy to reduce catastrophic costs for tuberculosis treatment in Nepal?”



BNMT also presented two posters entitled “Socio-economic barriers and facilitators to engagement in MDR TB treatment: a qualitative exploration from the patient perspective” and “Community based Active TB Case finding intervention in Central Nepal”. Poster presentations were prepared by District Program Coordinators, Mr. Tara Prasad Aryal and Mr. Ram Narayan Pandit. A team of four members including Advocacy, Networking and Resource Mobilization Manager Ms. Saki Thapa and Public Engagement and Training Officer Ms. Bibha Dhungel participated in the summit.



Donation to the Chepang Community



My name is Sarah Gregory; I am BA Geography at Leeds University student in the UK. I had the opportunity to undertake an internship at BNMT Nepal. My interest focused on Nepal's accessibility to health, how health fluctuates across Nepal's demographic variation and the attitude of the people towards health in rural and urban communities.

Visiting the rural areas of Nepal has been inspiring. I feel honoured to have lived and worked with and alongside the most resilient, inventive and tough Nepalese who, despite the relatively basic and challenging environment, demonstrated a proud and above all, happy and uplifting spirit. I found the Chepang Community particularly special; an indigenous group residing in Nepal's forested hilltops. Reaching their local health post, school and other basic amenities can take hours across small dirt-tracks along the hills. Working on the IMPACT TB project, we began active-case finding in the Chepang villages. They were overwhelmed with the work we had planned, attempting to uncover TB cases in the communities; however they appeared desperate for everyday essentials such as clothing, shoes and first aid kits. Alongside my BNMT work, I established a just-giving page to fundraise for the Chepang communities. I began with a target of £250, however, the generosity of my friends and family managed to raise over £1000. The village of Raksirang were given clothing and each home received at least one pair of trainers. For Majwang village, we focused on the school and supplied children with calculators, school shoes and bags, umbrellas for the monsoon season, sports equipment, books, menstrual pads and first aid kits. Without the support of BNMT, I am not sure I would ever have had the privilege of seeing a lifestyle so far from my own. Overall, being able to show the world how a small contribution can make such a positive impact on life in the marginalized Chepang Community has hopefully inspired others to support the rural communities of Nepal.



IT'S TIME



“It's time all the patients diagnosed with TB should be cured. Counseling patients and their families for treatment increases treatment adherence and wellbeing.” - *Rabina Wagle*



“It's time to strengthen the active case finding activities in slum areas and hard to reach population.” - *Rebika Dahal*



“It's time to expand awareness campaign to the marginalized communities in Terai.” - *Sukh Chandra Mahara*



“It's time to advance women's access to tuberculosis care and break the wall of stigma that surrounds it.” - *Kritika Dixit*



“It's time to unite together to end TB in Nepal.” - *Ram Narayan Pandit*



“It's time to improve the quality of life of people with tuberculosis rather than focusing only in medicine.” - *Tara Prasad Aryal*



“It's time to find hidden patients with TB and help them to get standard treatment and quality care.” - *Bholu Rai*



“It's time to work together to fight against TB.” - *Govinda Majhi*



“It's time to adopt good practices from past endeavours and be determined to cultivate those learning in our work today.” - *Dr. Manoj Kumar Sah*



“It's time to reduce food insecurity in the household of patient with TB.” - *Puskar Poudel*



“It's time to spark action through stakeholders' dialogue.” - *Olivia Biermann*



“It's time to end the stigma and discriminative attitudes towards TB patients.” - *Mr. Suman Chandra Gurung*



“It's time to END the apathy and act.” - *Dr. Maxine Caws*



“It's time to support patients with TB to reduce the catastrophic costs.” - *Raghu Dhital*



NEPAL UK ENDURING FRIENDSHIP



One of the founder members of the BNMT UK Ms. Rosemary Boere has raised funds of £230 by selling plants in her home town in the UK and in memory of her beloved brother.

In memoriam



Robert Chalmers Reid



The Britain Nepal Medical Trust UK's co-chair Prof. Dr. Surya P. Subedi, QC, OBE, has been awarded higher doctorate, the degree of Doctor of Civil Law (DCL) by University of Oxford for his exceptionally insightful and distinctive publications that contain significant contributions to the study of law.

What a proud moment for all of us at BNMT Nepal! Many congratulations to you Sir!

BNMT Team

An experience with BNMT

Dr. Gillian Holdsworth

I joined BNMT in 1986 as a field doctor. I was two years out of medical school and had just left a busy job in A&E at Kings College Hospital, London. I was looking forward to something different. I spent six weeks in Kathmandu undergoing daily Nepali language lessons before my 'village stay' in Godavari. It was a real eye opener as I slept on a charpoy in a room with chickens and was expected to eat dal bhat with my hands!

I was posted to two districts in far eastern Nepal, Ilam and Phidim. Ilam was located on a pitched road with a regular bus service and surrounded by glorious tea plantations. Phidim, meanwhile, was a day's walk north: a small bazaar. The clinic was new, and I was lucky to have the very experienced 'clinic in charge', Kashi Ram Chaudhary, to help me set up. At the clinic, people with suspected TB would provide us with three morning sputum samples which we look under the microscope for the tubercle bacilli. Once diagnosed, patients would embark on a twelve month course of treatment which included two months of daily injections. I soon opened a TB hostel for our patients during treatment which allowed them and their families to stay for free, subsidising the cost and upset of staying away from home. After completing the injections patients would be

discharged with a month's supply of treatment, and arrange to meet the BNMT visitor at their local health posts for follow ups every month. I would accompany my health post visitors around the district catching up with old patients, staying at their homes and meeting their families.

Then in 1997, I had the opportunity to undertake a child health and nutrition survey in Humla, which was a very different experience as I was living with a Bhotia community called the Nyimba.

By 2007, BNMT was celebrating 40 years of improving the health of Nepalese people and I took advantage of this landmark event to undertake one of my favourite activities – trekking. I planned my Noble Trans-himalaya Trek (now known as the Great Himalaya Trail): walking from Humla in the northwest to OlangchungGola in the northeast. It was designed to allow Trust members, friends and family to join for shorter periods and partake in the activities as well as fundraising.

By 2009 I was given the tremendous honour to become co-Chair of BNMT. BNMT is one of the longest serving INGOs in Nepal, not many small charities survive this length of time. When I worked in Nepal there were 200 Nepali doctors for the whole country and no medical schools. Now there are Nepalese doctors training all over the world as well as more than 20 medical colleges in Nepal. Diagnosis and treatment for TB has advanced: the use of GeneExpert for diagnosis on sputum specimens delivered by drone and the introduction of short course chemotherapy allows patients to complete their treatment in six months. During this period BNMT had moved from an organisation run by British doctors to a Nepali led INGO and we were keen to support the development of Birat. Nowadays, BNMT UK provides a small proportion of the overall funding for Birat and continues to support and advise the Birat board.



With Sonam Rinjin on my Noble Trek in 2007 raising money for BNMT

DONORS AND PARTNERS

ORGANIZATIONAL DONORS

1. The Britain Nepal Medical Trust, UK
2. European Union
3. Nick Simons Foundation
4. Stop TB Partnership
5. Wellcome Trust
6. Global Fund/Save the Children International
7. Amplify Change
8. Everest Marathon Fund
9. Big Lottery Fund, UK
10. TB Modelling and Analysis Consortium
11. Farrar Foundation

INTERNATIONAL PARTNERS

1. Liverpool School of Tropical Medicine, UK
2. Karolinska Institutet, Sweden
3. KNCV Tuberculosis Foundation, The Netherlands
4. Friends for International Tuberculosis Relief, Vietnam
5. Johns Hopkins University, USA
6. Stony Brook University, USA
7. WeRobotics, Switzerland

MAJOR NATIONAL PARTNERS

1. Ministry of Health and Population
2. Department of Health Services
3. National Tuberculosis Centre (NTC)
4. National Health Training Center (NHTC)
5. Provincial Health Directorate (RHD)
6. Health Offices
7. Municipalities / Rural Municipalities
8. Health Facilities Operation and Management Committee (HFOMC)
9. Local NGOs/Civil Society Organizations
10. National Health Research Council (NHRC)
11. Social Welfare Council (SWC)
12. Nick Simons Institute
13. Nepal Flying Labs

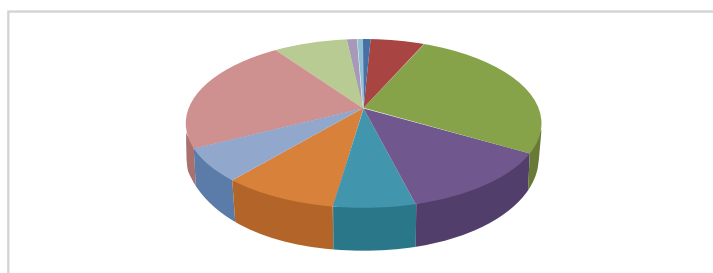
FINANCIAL OVERVIEW

BIRAT NEPAL MEDICAL TRUST Balance Sheet as at 3/31/2076 (July 16, 2019)

Details	2075/76		2074/75	
	Amount (NRS)	Amount (NRS)	Amount (NRS)	Amount (NRS)
Fixed Assets:				
Tangible Assets		4,578,502		4,578,502
Current Assets:				
Debtors	3,191,791		8,165,411	
Investments	-		-	
Cash in Hand	60,000		40,000	
Cash at Bank	29,032,117		67,461,301	
	32,283,908		75,666,712	
Liabilities and Payables:	3,624,418	3,624,418	3,439,449	
Net Current Assets		28,659,491		72,227,263
Total Assets less Liabilities		33,237,993		76,805,765
Charity Funds				
Restricted Fund		33,029,529		76,597,301
Unrestricted Fund		208,464		208,464
		33,237,993		76,805,765

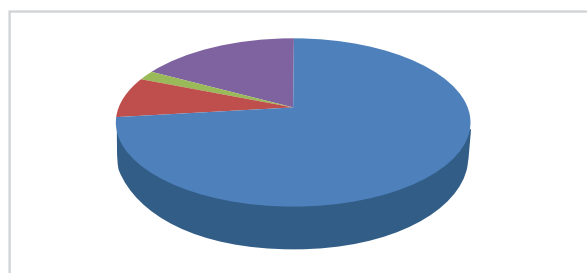
*unaudited

Total Income: NRs 73,725,500



- AmeriCares
- BNMT/BLF
- GF/SCI
- EU/IMPACT TB
- Stop TB/UNOPS
- BNMT UK
- WELLCOME TRUST
- Stony Brook University
- AmplifyChange
- LSTM
- Other Income

Expenditure : NRS 117,295,171



- Programme Cost
- Administrative Cost
- OD & ST
- HR Cost



GALLERY



Former Chairperson of the BNMT UK, Mr Jeff Mecaskey visited BNMT Nepal



New kitchen utensils purchased from the donation by one of our founder members, Ms Rosemary Boere



SRHR capacity building workshop for local civil society organizations at Sindhupalchowk



Welcoming former BNMT Director, Dr. Anthony Bondurant to BNMT Nepal



Co-chair Dr. Gillian visit to Nepal



BNMT Nepal welcoming new NTC director



World TB Day celebration in Mahottari



FCHVs look up the sky as the drone flies



Birat Nepal Medical Trust (BNMT Nepal)

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VISION

Improved health and well-being of the Nepalese people.

MISSION

To ensure equitable access to quality health care and an enabling environment for socially and economically disadvantaged people.

PROGRAMME FOCUS

Health, climate change and environment – contributing to improved health, livelihood and social harmony.

WORKING PRINCIPLES

Adhere to and appreciate partnership at all levels
Ensure sustainable development
Respect for equity and diversity
Inclusion
Promote transparency and accountability

WORKING APPROACHES

Human rights based
Partnerships and alliances
Participatory, gender and social inclusion



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