LEARNTB: ADDRESSING CHILDREN'S TB EDUCATION IN INDIA

Project Summary

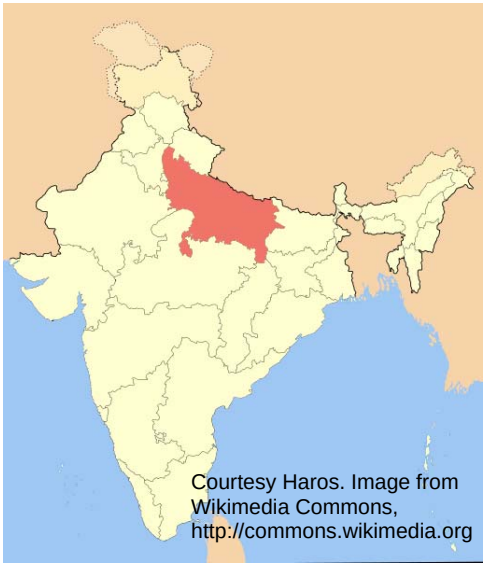
Over five million people suffer from tuberculosis (TB) in India and one thousand people die each day. TB medication is available to help save these people, but delivering the medication and monitoring a patient's compliance to the drugs still remains a huge challenge. Moreover, TB eradication involves more than treating those known to be affected. To prevent the transmission of TB, we need to raise awareness of the disease and how it can be contracted and cured. LearnTB addresses these specific challenges in a sustainable and effective manner.

Specifically, we focus on public health education by targeting the primary school-aged community. These are members of society who are most likely to benefit from this knowledge and have access to an educational setting. We have developed an understandable, fun, and activity based 3-week curriculum to educate the school-going population of underserved communities about the TB disease, contraction, prevention, and treatment. Currently, our team has outstanding teaching experience and is capable of teaching in three languages: English, Hindi, and Bengali. LearnTB's partner organization in our TB education campaign is ASHA for Education, a group that sets up schools and additional informal learning centers in underserved communities in India. Currently, ASHA has over 700 educational projects which reach out to thousands of people and have widespread impact. We are working directly with the ASHA branch in the village of Natpurwa in Northern India as well as the ASHA chapter in Boston to tailor our curriculum to the background and needs of the community we intend to work and disseminate our curriculum to our target demographic

Background

Need

LearnTB's target pilot community for increasing TB awareness and education is Natpurwa in Uttar Pradesh, India. Natpurwa (population 1,200) is comprised mainly of members of the *Nat* caste made up, traditionally, of "vagrants," along with members of the *Waddar* and *Beldar* castes. Prostitution has been the main profession of the people in Natpurwa for the last three-hundred years, and women are seen as the family heads in this community. In Natpurwa, prostitution is seen as a "tradition" started when seven people in the Rajput king's army party were left in the village during the reign of the Mughal emperor Akbar (1556-1605). The five women in the party exchanged sexual favors with a local zamindar, or tax collector, in return for housing. Prostitution is said to have been the common trade since that time. Because of the widespread prostitution in Natpurwa, HIV/AIDS incidence is a high risk for women in this community and for their children. TB prevalence is high in this immuno-compromised population. In fact, TB accounts for up to a third of AIDS deaths worldwide.



To address the spread of TB that is common in this village, we have developed a 3-week curriculum that targets the primary school-aged community. With ASHA support, two brothers, Neel Kamal and Guddu, have established a primary school for children in Natpurwa. Today, about eighty-five children attend the Asha Vidyalaya School. They are not only taught speech, reading, and writing, but are also given basic training in agriculture and allied crafts that can later help them earn an income. The establishment of the school has inspired other changes in the community. A number of self-help groups have developed in the area, teaching women about AIDS transmission, health, and hygiene. Men in the community are being encouraged to take up jobs in agriculture, animal husbandry, bee keeping, etc., and women are being trained in 'chikan' embroidery. In addition, villagers are taking responsibility for the marriage of their daughters rather than allowing them to fall into prostitution. Evidently, villagers in Natpurwa have taken the initiative to help themselves overcome prostitution and HIV infection, and thus ASHA anticipates they will be receptive to education about TB. Also, ASHA has worked to bring health awareness camps and workshops to the villagers and we believe LearnTB's curriculum will be welcomed and helpful with ASHA's backing. ASHA provides a strong educational support structure that will be helpful to us in the development and dissemination of our curriculum in the Asha Vidyalaya School and possibly ASHA's other affiliated schools.

We have chosen to work in this community for a variety of reasons, the foremost being the strong link between HIV and TB incidence that exists globally. TB prevalence is high in this immuno-compromised population. About one-third of the people living with HIV/AIDS in the world are co-infected with TB, and TB accounts for up to a third of AIDS deaths worldwide. The need for TB prevention in communities affected by HIV is great. Up to half of the people living with HIV/AIDS develop TB, and this TB has an adverse effect on HIV treatment, due to high costs of both medications and high toxicity of both medications when taken together. Oftentimes, HIV patients must complete TB medication before beginning antiretroviral therapy. The World Health Organization (WHO) has called for a focus on synergy HIV and TB prevention, particularly in areas where the incidence of each is high.

Prior art

The best- known past approach to eradicating TB has been the DOTS treatment which requires direct observation of TB patients taking their medicine. The DOTS (Directly Observed Treatment Short Course) program, created by the WHO is the major international program in TB intervention in the developing world. DOTS employs five major strategies in fighting TB: political commitment and sustained funding, reliable diagnostic services and equipment, direct observation of treatment, adequate drug supply and management, and a reliable evaluation system. DOTS has proven effective in increasing drug adherence among people affected by TB because treatment is directly observed by a medical official. However, it is that degree of direct control which also makes the program expensive. Thus, it is difficult for people in medically underserved and poor areas in India to have access to the program. "Direct observance" in these places becomes less reliable. In addition, DOTS focuses on the medical treatment aspect of tuberculosis, rather than the educational and cultural aspects of understanding, treating, and preventing transmission, where we intend to focus in our project. There are several factors in disease transmission that go beyond the purely medical aspects. These educational and cultural changes have the potential to change the thinking and add to the medical knowledge of entire communities to reduce TB transmission and treat the disease more effectively as a social group.

The hope is that with these educational and cultural initiatives people will begin to rely on preventive measures rather than expensive drugs to maintain good health.

Concerning educational and cultural initiatives to disseminate TB information, there have been few programs that are widely accessible and applicable towards developing countries' hoi polloi. The CDC (Center for Disease Control) has information about TB that is accessible to the public, and even a training module about tuberculosis: the mechanics of transmission and treatment options available (http://www.cdcnpin.org/scripts/tb/cdc.asp). However, information on this website is directed towards medical professionals and is too technical to be deciphered by the average American citizen. Also, the aim of many of the educational information provided through the CDC is to educate parents about their children's TB risk rather than educating the children about the TB disease. The American Lung Association was the only source with TB education materials targeting children. Their approaches include an educational flash animation with a character called "Mr. TB Germ"; however, it is only available online and is in a media form that would be unfamiliar to many rural children. There have been a few other child-targeted TB educational approaches such as a TB bingo game by the Hawaii State Department of Health and a TB coloring and activity book by the North Carolina Department of Human and Health Services. There is a lack of an integrated child-targeted curriculum which includes both lesson plans and fun activities/games.

Innovation

LearnTB's innovation lies in its presentation of understandable TB concepts in an easily-implemented, child-targeted, and flexible format that is comprehensive in covering all aspects of TB. As mentioned previously, the best known past approach has been the DOTS treatment which requires direct observation of TB patients taking their medicine and focuses on the medical treatment aspect of TB infected individuals, rather than the educational and cultural aspects of a TB susceptible population. However, there are multiple factors in disease transmission that extend beyond the purely medical aspects. *Improvements in health education and awareness in the community are essential for disease control* in the long run and will eventually lead to reduced medical costs as more people rely on preventive measures rather than expensive drugs to maintain good health. We hope that by educating the children of the community we are raising TB awareness with those who are most likely to have access to an educational setting and apply what they learn over their lifetime. By learning about all aspects of TB, children in Natpurwa can better protect themselves from infection, understand the disease and how it can be cured, and use this knowledge to slow TB transmission within their generation.

Our 3-week curriculum is structured with concept-based agendas and educational comic strips. Each agenda comes with multiple concept-related interactive learning activities that are each self-contained. The curriculum is flexible; it is very easy to add or delete activities to the curriculum without disrupting its flow. This modular approach is important to the adaptability of the curriculum in Natpurwa and in future villages that will take advantage of our curriculum. The 10 lesson plan is of the following format:

1. What is TB (beginning attached on pg. 10)
2. Mechanisms of disease transmission
3. Symptoms & When to see a doctor

4. How to prevent yourself from spreading TB to others
5. The difference between TB infection and disease & How to test for TB
6. Feelings about stigma
7. How to care for oneself
8. How to treat TB & Drug Resistant TB & The importance of adherence [Part 1]
9. How to treat TB & Drug Resistant TB & The importance of adherence [Part 2]
10. HIV & STIs

Additionally, the innovation of our curriculum lies in its cultural sensitivity and relevance. When designing the curriculum, LearnTB made sure to include a section on dealing with stigma in Indian culture. The TB curriculum is also closely tied with HIV/AIDS concepts as it is a correlation that is of great concern to Natpurwa and much of India. Also, many of our role-playing activities are set up with situations that are the cultural norm and not infused with Western examples. There is no existing TB curriculum developed in this modular and culturally relevant fashion and that specifically targets children.

LearnTB also plans to make a simple educational pamphlets and videos targeted at Indian adults in high-risk areas that can be distributed by ASHA and by other NGO contacts that ASHA has within India. These materials will be translated into the major Indian languages, utilizing the multi-lingual skills of our team members and associates. A project with easy to understand TB concepts directed towards the impoverished is currently not in existence and in an easily distributed form of media that has ability to target the wide network that ASHA provides.

Justification

As mentioned in the "Prior Art" section under "Background" there is a need for a cultural and social solution for TB prevention and awareness that is not addressed by the well known DOTS solution. DOTS is expensive to implement and the community of Natpurwa simply can not afford that expense. The information offered online by the CDC is not easily understood, untranslated, and does not provide a structure in which the information can be integrated into a school's curriculum. Also, most TB education information can only be found online, a form of media that the people of Natpurwa have no access to. LearnTB's curriculum is cheap, understandable, translated, flexibly formatted to fit into any school's curriculum, and offered via easily distributed pamphlets/curriculum booklets. Thus LearnTB's strategy and innovation provides great advantage and benefit over any existing solutions for TB awareness in Natpurwa and the many rural regions in India.

Feasibility

Our team has been working on this project since October of 2006, when LearnTB first got in contact with the ASHA chapter in Boston. We spent several months reading the relevant background information about tuberculosis treatment and education worldwide and learning about the structure of schooling within the ASHA projects. We have also written an outline of topics we feel are important to address in our curriculum and already made completed half of the detailed curriculum modules. Part of Lesson 1 is included on page 10 of this proposal. The structure of LearnTB's curriculum follows a similar format to that developed by one of our team members, Aparna, while she was investigating the role of gender in the propagation of domestic

violence and in facilitating the transmission of HIV/AIDS, a format she found to be very effective and implementable.

Implementation plan

We hope to implement LearnTB's curriculum over a span of two months in Natpurwa from June to August 2007. When we arrive in Natpurwa, we would like to begin classes as soon as possible. That means that we will already have our curriculum and lesson plans outlined. Designing the course is the most time-consuming aspect of the project, and we have already made considerable progress. LearnTB has already outlined the curriculum, and will complete our first draft of all of the lesson plans by April 1. Throughout the month of April, we will revise the lessons and design the interactive materials as well as prepare pamphlets and a video. We had been approached by ASHA to condense some of our information into pamphlets and videos that can be distributed throughout India. We plan to make a simple pamphlet and video targeted at Indian adults in high-risk areas that can be distributed by ASHA and by other NGO contacts that ASHA has within India. We plan to translate these materials into the major Indian languages, utilizing the multi-lingual skills of our team members, friends, and family (we have the capabilities to teach in three languages: English, Hindi, and Bengali within the team itself).
We will send the materials to ASHA by May 1 for them to review, and once they have approved the structure, they will send the materials to Natpurwa.

When we arrive in Natpurwa in early June, we will meet with the teacher to review the lesson plans and discuss community needs. Throughout the class, we will observe how the teacher presents the material. The course is intended to be taught as ten classes over a three-week period. After the first session, we will evaluate the course and make changes to the class structure as needed. Then, the class will be taught again to another group of students for Phase 2 of our project, and we will observe the implemented changes.

While in Natpurwa, we would like to talk with adults in the village to learn what they know about tuberculosis and if they have any misconceptions. LearnTB plans to meet with people who have been diagnosed with TB to discuss how they are taking care of themselves and understand how people view the disease in the rural setting. Additionally, we hope to discuss the idea of TB Clubs, a program that was started informally in Ethiopia, and has been shown to be highly effective in recognizing symptoms of TB in those who have not been diagnosed as well as encouraging patients to follow their regimens. We would like to meet with doctors and visit health clinics nearby to inform surrounding communities of what we are doing and give them the opportunity to use the materials. The class is designed to be highly adaptable to different age groups and different populations throughout India. To assess success and measure the amount the children have learned, we plan to organize a large community event in which we will distribute our educational materials and the children will perform several skits about TB awareness and also make their own educational presentations. We hope that this way the community will appreciate the knowledge their youngest have gained and that they too will learn about TB. This event will also be a good gage of how much the children have retained from the curriculum and instill in them a sense of confidence that they can be active and educate their own community. After we complete our final design for the class, we hope to make the materials available online so that any school can obtain all of the materials and teach the class on their

own. We are also attempting to find contacts in other rural communities to make them aware of the opportunity to use the materials.

Challenges

Some challenges LearnTB faced when developing our curriculum and working with our community partner, ASHA for education included a lack of personal connection to Natpurwa, inability to translate all Indian dialects with team talents, and the need for a translator since the members of LearnTB are not completely fluent in the dialect of Natpurwa.

None of LearnTB has traveled to Natpurwa before and do not have any family that reside in that region. This lack of personal connection makes it a bit more difficult to obtain direct information about the community and subtle details about the culture there. Thus, we are required to rely heavily on our community partner, ASHA for Education in delivering to us the necessary information. However, working through ASHA has only been a positive experience thus far and they have provided us thorough answers to all of our questions. Concerning translation abilities, LearnTB plans to translate the curriculum into two major dialects of India- Hindi and Bengali. The India Constitution recognizes 18 official Indian languages, and almost all 18 of the languages include different dialects or variations of the language. Thus, it is a great challenge for LearnTB to translate the TB curriculum and education pamphlets to all 18 of the languages with team talent alone. We hope ASHA and community partners we develop while in Natpurwa can help us translate and make our materials accessible in the other major dialects and the rural dialects.

Support network

Community Partner:

LearnTB's partner organization in our TB education campaign is ASHA for Education, a group that sets up schools and additional informal learning centers in underserved communities in India. Currently, ASHA has over 700 educational projects which reach out to thousands of people and have widespread impact. We are working directly with the ASHA branch in the town of Natpurwa as well as the ASHA chapter in Boston to tailor our curriculum to the background and needs of the community we intend to work and disseminate our curriculum to our target demographic. They have been instrumental in providing us information about the history of the community, the structure of education, and the children in the school so that LearnTB can better create a curriculum more applicable to their situations.

Advisor:

LearnTB has also made contact with infectious disease specialists who have helped us better understand the most critical points that we need to convey to the community via our curriculum. We have been in communication with Dr. R. Balasubramaniam, who is part of the Swami Vivekananda Youth Movement, a non-religious, non-political voluntary organization that runs a 10-bed hospital in Kenchanahalli and a 40-bed hospital in Saragur in the state of Karnataka. SVYM has also established the Viveka Tribal Center for Learning at Hosahalli, a semi-residential school that educates over 400 children. Dr. Balasubramaniam works both in health and in education. He is part of a committee within the National Council for Education Research and Training (NCERT) trying to introduce a subject about Health and Physical

Education into the curriculum in governmental schools in Karnataka (educational curricula are state regulated in India). He has been a valuable resource to LearnTB in both the health and educational aspects of the project.

Our team has a strong Indian support network. Among our team members, we have family in West Bengal, Tamil Nadu, Gwaliar, Meerut, Maharasthra and Uttar Pradesh in India, with collective knowledge of languages, including Bengali, Hindi, Tamikl, and Telegu. These family members have first-hand knowledge of both the educational and health-care systems in India, and will be valuable resources to LearnTB in adapting our curriculum to suit cultural needs. We also know several medical professionals in India, including Dr. R. Balasubramanian and family doctors.

Timeline (Sketch out the main steps in a Gantt chart or timeline.)

	3/1	4/1	5/1	6/1	7/1	8/1
First draft of curriculum completed						
Finalized lessons and interactive materials completed, send to ASHA for critique						
Plan trip logistics to Natpurwa, arrive in early June						
First 3 weeks: • gain familiarity school and community • teach entire curriculum						
4th week: • Reevaluate curriculum • Visit TB clinics, find other potential communities for curriculum **Last 3 weeks:** • Teach revised curriculum • Distribute curriculum, materials, and train teachers **Last few days:** • Organize community/ school event around TB awarness						
Make curriculum and materials internet-accessible						

Community Connection & Impact

Connection

LearnTB has been working closely with Meli Annamalai who is the ASHA contact for the Natpurwa community in Uttar Pradesh. We expect that we will also work closely with the ASHA staff located in Natpurwa and the general staff in India to distribute LearnTB's curriculum and better tailor it to the community's needs. Additionally, we will be working closely with the administrators and heads of the Asha Vidyalaya School, brothers Neel Kamal and Guddu.

LearnTB knows we are providing a service to the community having presented our idea to Meli Annamalai who gave her full support for our project. She believes that our project will be very beneficial and feasible in the community and as the ASHA community contact for Natpurwa she would be the best able to judge how successful our project could be. LearnTB takes her confidence and support as a great sign that what our innovative curriculum will be successful and appreciated in Natpurwa. Also, after extensive research about what is available to Natpurwa and other rural Indian communities, LearnTB is convinced that our curriculum is offering a better solution to what is currently available in terms of TB education and prevention. See the 'Innovation' section for more information.

Magnitude of effect

There are two possible outcomes for the implementation of our education program. It is possible that students and parents will hear the information we are giving them and not do anything to improve TB preventive or treatment measures taken in their home. On the other had, they might hear our information and become inspired to enact change within their own homes or within the community as a whole. LearnTB has designed our curriculum in order to favor the latter outcome as much as possible. We do this in several ways. First, we will make parents involved in the homework assignments. This will not only help put TB into the perspective of the community for the child, but will also help to educate parents about TB prevention and the importance of drug adherence. In addition, we plan to introduce role-play activities into the curriculum. We have found from prior work in HIV that role-play is an effective tool for the understanding of different feelings and perspectives evoked by a particular subject. LearnTB's hope is that through role-play, children will understand the feelings associated with a long-term illness and will be less likely to stigmatize TB-infected individuals whom they may meet in the future. Furthermore, we plan to use plenty of hands-on activities (including mapwork and drama) to keep the children interested in the topic. We hope that this activity will also stimulate enhanced memory of particular subjects.

After the curriculum has been accepted by the Natpurwa school, LearnTB plans to make it internet-accessible to the public. We hope that the idea will catch on in other ASHA and non-ASHA schools in India and elsewhere, and we hope that teachers around the world will utilize parts of our curriculum within their own classrooms. In this way, the magnitude of effect of our curriculum is boundless.

In addition to the primary school curriculum, LearnTB believes that our educational pamphlets and videos will be useful. Through clear, concise writing and relatable concepts, the materials will hopefully be well understood and accepted. LearnTB hopes that these materials will be disseminated on a wide-scale to rural communities all around Uttar Pradesh, and that people will generally become more educated about TB prevention and treatments.

Additional effects

We also stand to gain personally from work on this project. Aparna and Jessica are specifically interested in public health and learning about working in communities in the developing world. We hope our work with Learn TB will be helpful to us in any public health work or international medical work we pursue in the future. Nupur sees this project as a way to learn more about methods of increasing health care awareness and will be helpful to her desired

career of social entrepreneurship in healthcare. LearnTB as a whole looks forward to a truly immersing public service project that challenges us to teach scientific principles in clear, comprehensible ways.

References

TB in India information/facts

http://www.tbcindia.org/Pdfs/Est_TB%20burden_India_TRC.pdf
http://www.tbcindia.org/
http://www.who.int/hiv/topics/tb/tuberculosis/en/
http://www.literateworld.com/India-History.htm

ASHA for Education: Community Partner

http://www.ashanet.org/
http://www.ashanet.org/focusgroups/sanctuary/conf/report/confreport.htm
http://www.ashanet.org/projects/project-view.php?p=350

What is Tuberculosis?: An Introduction

Lesson 1, Page 1

Objectives:

- (B) Discover perceptions about tuberculosis within the class
- (C) Introduce tuberculosis as a disease (general introduction)
- (C) Discuss the prevalence of tuberculosis in India
- (D) Discover the prevalence of tuberculosis in the world

Materials:

- Flip chart/Board
- Black and white world maps
- Colored pencils (6 different colors)

Estimated Time: 50 – 55 minutes

Key Content:

1. **Introduction to tuberculosis; 5 minutes**
    - Importance of wellness in day-to-day life
    - Discussion of previous encounters with illness
2. **Activity: Perceptions about tuberculosis; 15 minutes**
    - Brainstorming perceptions about tuberculosis
    - Discussion
3. **What is tuberculosis?/Incidence in India; 5 minutes**
    - Description of tuberculosis (very general)
    - Incidence in India
    - Discussion of experiences with tuberculosis
4. **Activity: Prevalence of tuberculosis in the world[2, Appendix A]; 25 – 30 minutes**
    - Description of map
    - Coloring map
    - Discussion of map

Key Messages:

- (A,B) “It is important to have correct information about tuberculosis.”

- (C,D) “Tuberculosis is common in India, but it is possible to both treat and prevent it.”

Teacher’s Guide:

A.) Introduction to tuberculosis; 5 minutes

Budget for LearnTB project (~June 1 to August 1, 2 month duration)

Item	Unit Cost	Quantity	Total Costs	Comments
Transportation to India	$1,500	2	$3,000	Airline tickets range from $900-$1,800 on cheaptickets.com
Transportation within India	$100	2	$200	Includes all domestic flights/trains/buses
Living expenses within India	$75	2	$150	-New Delhi hotels~$20 a night living -expenses should be little to none in Natpurwa
Paper and Printing	$75	1	$75	-Cost for printing educational materials: curriculum, pamphlets before going to India -Bringing ~30 curriculum/ 200 pamhplets
Phone calls/ Communication with community partners	$30	1	$30	Skype calls ~$10/hour phone cards while in India
Translator	$100	1	$100	We expect to need translation for about ~3 hours per day @ $3 an hour
Total			$3,555	
Contingencies (10%)			$355.50	
Final Total			$3,910.50	

Current efforts to obtain funding ASIDE from the IDEAS competition:

PSC fellowship: Two of our team members, Daniel and Jessica applied for a PSC fellowship but were unable to attain an interview. (Nupur and Aparna (seniors), and Malancha (grad student) were not eligible to appy)

PSC Expedition Grant: Daniel and Jessica are currently in the process of applying for this grant.

MISTI- India: Daniel has spoken several times to Deepti, who is an administrator for the MIT-MISTI program about funding for LearnTB. Deepti has expressed great interest and Daniel is currently working out the details to obtain this funding.

Fundraiser for ASHA for Education

LearnTB is passionate about ASHA's mission and have also decided to fundraise for the organization aside from finding funding for our project. We are holding a "Charity Raas Garba" event on Friday April 20th from 8PM to 11PM. We hope it will be a huge dance event with attendees of all ages and from all areas of Boston. Garba, Raas, and Bhangra lessons precede group dances. All proceeds going entirely to ASHA. LearnTB will be having an informational booth about ASHA, the TB problem in India, and also about the LearnTB project at the event. In this fashion we hope to raise awareness about the TB problem.

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