Medicus Mundi Suisse
Réseau Santé pour tous
Netzwerk Gesundheit für alle
Network Health for All

MMS Bulletin #131
La Santé Globale et le Soin Infirmier

Advanced Practice Nurses to improve Tuberculosis control

The danger of a cough

De Andrea Müller, Silvia Grob, Claudia Dell'Apollonia

"It is a matter of a deep concern that TB continues to kill one person every two minutes or almost 750 people daily in India". On the 5th Global Health Forum two Indian projects using Information and Communications Technologies were presented which successfully reduced multi drug resistant TB. Such interventions are not needed in an advanced health care system like Switzerland: Myth or truth? The authors compare Indian to Swiss findings and provided answers to the roles of health care workers and nurses.

Red Cross Volunteer of an Indian TB Center (Photo: Benoist Carpentier / IFRC)

Dr. Robert Koch astounded 1882 the world discovering that TB bacillus is the cause of tuberculosis (TB). Today, 132 years later TB is still a serious public health problem. According to the World Health Organization (WHO) approximately 8.6 million new cases are detected each year. That means that a third of the world's population has been infected by mycobacterium tuberculosis which may lead to the disease tuberculosis (World Health Organization, 2013, pdf). TB ranks as the second leading cause of death from a single infectious agent after HIV (World Health Organization, 2013). The infectious bacterial disease TB most commonly affects the lungs and spreads through the air. Falling ill with TB is common for vulnerable people e.g. women, children, elderly and very poor people living with or without HIV/AIDS. Health care workers are also at a high risk as they are exposed to those with TB. The symptoms of active TB are coughing, sometimes with sputum or blood, chest pain, general weakness, weight loss, fever and night sweats (World Health Organization, 2014).

With 26% of all TB infected persons, India has the highest TB burden of the world (World Health Organization, 2013, pdf). The government of India runs a national strategy against TB named Revised National Tuberculosis Control Programme (RNTCP) including the principles of Directly Observed Treatment-Shortcourse (DOTS). The programme provides special TB hospitals including free diagnosis and treatment for everyone and free of cost for quality tuberculostatics across the country. More than 100'000 patients are placed on treatment every month (Revised National Tuberculosis Control Programme, 2014). However, the free treatment hospitals in India are difficult to reach for poor people from rural areas. To solve this problem, two projects using information and communications technologies (ICTs) such as mobile applications CommCare or fingerprint were evolved. These projects were presented at the 5th Global Health Forum in Geneva 2014.

Method

We conduct a case report to explore the difficulties in detecting and treating of *TB in India compared to Switzerland*. According to the OECD-report, Switzerland is classified as a developed country whereas India is part of the developing countries (Taylor & Francis Online, 2009). Therefore our first hypothesis is *TB treatment in Switzerland should work better than in India, as Switzerland is supposed to have an advanced health care system.*

To explore and describe the issue of *TB in India and Switzerland* we utilize the following data sources: A first step is the collection of the facts and information during the session at the Geneva Health Forum about „Harnessing ICTs to Improve Tuberculosis Control" including interviewing one of those participants. A case report from Switzerland based on a patient's documentation and interviews taken with an emergency room nurse, a supervisor of the asylum and an expert for the hygiene guideline serves as a second and comparative step.

Scientific literature is consulted to confirm and fortify our results in a third step. As a fourth and last step, we critically discuss our hypothesis within a peer group which leads to a comparison between TB care and treatment in Switzerland and India.

Results

Dr. Archana Trivedi is the leader of the pilot study "mTB Front Line Workers in a Tribal District in India", funded by Lilly Foundation. The Front Line Workers get a short training on the use of the mobile application *CommCare* for people living in rural and remote areas. CommCare assists rural health care workers in delivering and gathering health information quickly and efficiently. Typical symptoms concerning TB are explained with the help of pictures and simple dialogues to the poor people. What is more, people with chest symptoms such as coughing are detected and referred to laboratory technicians for sputum diagnostics. If the chest symptomatic person does not contact the laboratory within seven days, he gets a reminding message on his mobile phone. Front Line Workers are trained to use CommCare application as well as to deliver DOTS and therefore contribute to the health care delivery, as medical doctors are missing in the remote and poor area of Jharkhand district, northeast India. First results demonstrate that from 90 patients with chest symptoms, 23 persons started to take DOTS due to sputum microscopy diagnosing (Trivedi et al., 2014).

> *"As 80% of people do have a mobile phone, CommCare application is an effective tool to teach and inform persons in rural areas about TB, its diagnostics, behaviour and treatment" (Dr. A.Trivedi, Global Health Forum 2014)*

The second project that was presented at the Global Health Forum describes DOTS assisted by biometric technology. Dr. Shelly Batra is the senior manager of the Operation ASHA in Mumbai. The project that has been carried out in 2014 in collaboration with Microsoft Research consists in DOTS-centers where people can get their TB-treatment at convenient times (after work). Each center serves a population within 1.5 km radius. People give their fingerprint to an android or netbook system called e*Compliance* when taking the medication. Handling the electronic applications is very simple and if a patient misses one dose, the system sends an SMS immediately to the Programme Manager and Treatment Provider. Providers must follow up within 48 hours to find the patient, repeat TB education and administer therapy (Batra, 2014). 31'150 TB patients are successfully treated and the rates for non-adherence are reduced from 36% to 1.5% which minimizes the risk of multi drug resistant TB.

And what about nursing?

On the Global Health Forum, two successful projects were presented. What was missing was the possible role of registered nurses (educated health care workers) in early detection and control of TB. Nurses could improve medication adherence, counseling patients and their

families and coping with symptoms. Nurses could also deliver psychological and social support and coordinate care between patients, medical doctors, and other health care providers.

The missing aspect of the importance of the nurse's role in India

Gini Williams, TB Project Director; International Council of nurses, and participant of the Global Health Forum, emphasized the importance of caring as one of the key competences by qualified nurses. This is needed for a person centred care and high medication adherence. "Caring (as a concept) is an interpersonal process that is characterized by expert nursing, interpersonal sensitivity and intimate relationships" (Finfgeld-Connett, 2006, p.198). „In addition, a working environment that is conducive to caring is also necessary. Consequences include improved mental well-being among nurses and patients, and improvements in patients' physical well-being." (Finfgeld-Connett, 2006 p.202).

Assessing their needs as well as empowering patients is essential, especially in the treatment of Tuberculosis. As medication adherence is one of the main features to be addressed in TB control, it is of utmost importance that the TB treatment and care are organized in a comprehensive concept. G. Williams made the experience that few specialized nurses are working in such projects as there is no time for caring in a region with so many people. Nurses would prefer to be directly involved in problem solving. The involvement of nurses could lead to better results of TB control and also to reduced costs.

"The System in Switzerland works better" - Myth or truth?

In Switzerland, about 550 cases of TB are detected annually. Although this number has been constant for years, this illness represents a problem for the public health for different reasons. One reason is difficulties in diagnosing TB based on lacking development of the symptoms or challenges concerning the access and the communication of immigrants. The latter has direct consequences on patient's adherence. The ill person takes the tuberculostatics in accordance with the international standards under the surveillance of a field health care worker. The average cost of an uncomplicated TB treatment for one person is CHF 17'914.00 (Bundesamt für Gesundheit, 2012). In comparison, TB first-line treatment in India costs among 3211 Rs which equals CHF 49.00 (Ananthakrishnan, Muniyandi, Jeyaraj, Palani, & Sathiyasekaran, 2012).

To face these complex problems in a national strategy against TB, the Swiss government office for health formulated aims to observe and control the transmission of TB as well as its medical and social consequences. The strategy is directed towards all people who are active in preventing TB or dealing with TB infected patients (Bundesamt für Gesundheit, 2012). By means of a real case report from a regional hospital we would like to illustrate the difficulties of TB detection and control in Switzerland.

The danger of a cough – case report

Mr. S. is a 29 years old Indian seeking asylum in Switzerland. When he arrives at the center of accommodation and provisioning in Switzerland, a registered nurse delivers information about health, HIV-prevention and vaccination by the assistance of a computer program in the language Mr. S. chooses. In addition, he is asked several questions to screen for TB. According to his answers, he does not show any risk of TB.

Later on in the same year a doctor sends him to the nearby hospital because of a gluteal abscess. An interpreter is arranged to translate explanations of the planned surgery of the abscess. At the same time Mr. S. is treating a cough for four weeks at the general practitioner. As this is a period in which many people suffer from the flu, the supervisor in the home for asylums does not register the long period of coughing of Mr. S.

Unaware of its severity, Mr. S. is treated in the acute care hospital without any precautions. Several health care workers perform the necessary preparations and treatment steps with the presence of the interpreter. Mr. S. lies in the emergency room together with three other patients. As part of the surgery preparation and due to his cough, a routine chest radiography is taken. On the X-Ray, caveats are detected on Mr S.' lungs and raise the suspicion of tuberculosis. Sputum is analyzed and a bronchoscopy is arranged which confirm the diagnosis of pulmonary TB (PTBC). This new information leads to treatment in isolation with tuberculostatics. As an additional consequence, a QuantiFERON Gold Test (QFT-G) is taken six weeks after unprotected contact from the first-hand treating personnel and other exposed people in the hospital.

> *"Do I have a serious disease now? Have I already infected other people?" (Nurse L.)*

Horrible news for nurse L. who is now tested TB positive. This test result - given in the middle of her working shift - is a shock for her. At the end, she is asked whether or not she wants to start with prophylactic antibiotics. She does not know what to say. She has no clue what the illness is about. "Do I have a serious disease now? Have I already infected other people?", these are only two out of many other questions she has.

The following day, nurse L. is on sick leave and searches for answers. A physician, specialist in infectious diseases explains the possible treatment and its adverse effects as well as the according behavior. Nurse L. would not be allowed to get pregnant while taking tuberculostatics, for example. Based on all the information collected, nurse L. decides that there is no need for any treatment. The feeling of being infected and the possibility, that mycobacterium tuberculosis might cause an illness one day is all that is left. Still, this feeling is uncomfortable and encourages nurse L. to quit the working position in the emergency room and maybe even to change profession.

Asked about the consequences of this case, the experts for hygiene guidelines reply that daily

precautionary standards have to be improved and will be evaluated the following summer. The Swiss Lung Association will test other exposed people such as other asylum seekers living in the same home as Mr. S. for any consequent TB-infection.

A telephone interview with the supervisor of the asylum, who is not educated in health but cares for the asylum seekers, demonstrates that her knowledge about TB stems from experiences and is vague. She does know and utilize support from the lung association, but does not feel responsible for the asylum seekers and their medication. They have to care and visit the doctor by themselves even though they are not speaking the language of this country. As a consequence, there is a high risk that persons like Mr. S. do not understand the treatment and might not adhere to the complex medication regimen which could easily lead to multi drug resistant TB.

One approach to solving this problem might be that the Swiss Health care system (hospital, GP) arranges an interpreter for every visit of Mr. S. Another method would be that a specialized nurse (Advanced Nurse Practioner, APN) takes the responsibility of the asylum seekers in their home.

And what about nursing in Switzerland?

In Switzerland, many people think that TB is not a frightened disease anymore, as it was 50 years ago. Nevertheless, through immigration, TB becomes a public health issue again.

As shown in the case report, immigrants as a high risk group for TB, are not well supported by the Swiss Health care system. Asylum seekers are cared for by a person without training in healthcare. As this person is not responsible, there is a lack of coordination and continuity of the TB treatment for immigrants. A clear communication system supported by modern technology is missing in Switzerland. The role of a specialized nurse could be a leading and coordinating position in medication adherence and symptom control as well as in supporting and educating patients.

Conclusion of the case report

The case report of Switzerland described that the first contact with the immigrants is very important for different reasons. In order to exclude subsequent misunderstandings a good communication is one important aspect for this underestimated disease. To solve this problem the Swiss Health care centers could arrange an interpreter to interact with immigrants. Furthermore Advanced Nurse Practitioners (ANPs) could take the responsibility for asylum seekers in their home.

Comparison of TB control in India with Switzerland

TB is still a major public health issue with a high death rate, therefore a world-wide effort to control this disease is to be made. However, the severity of this lethal but treatable disease is

underestimated despite the National Strategy of Federal Office of Public Health, Switzerland and RNCTP, India. The health policy and regulations play an important role in fighting TB.

In India as well as in Switzerland effective communication between the different health care providers is an important issue for the successful treatment of TB. The weakness in Switzerland was the missing coordination of information between medical staff. In India there are very good and effective ICT projects with a highly developed technology, but they are not implemented all over the state. Therefore communication and organization of TB treatment has the potential to be improved in both countries.

The absence of a specialized nurse was recognized firstly as a weakness in the Indian projects, secondly in the discussion with G. Williams at the Global Health Forum, thirdly in the case report. At first glance, India and Switzerland have completely different problems, but on a closer look, they are very similar (i.e. detecting TB, Information and communication gaps).

Future prospects

The evaluation of the two successful projects demonstrated that the use of ICTs is helpful and strongly needed. The aspects "how do patients deal with the results and facts? Can they interpret results correctly?" could not be solved only with a technological approach. A patient-centred model supported by professional health care workers using ICTs should be the goal. Trained providers who are supported by modern technology and who visit patients in their places of living, can improve continuity of treatment and symptom control. In combating TB, more coordinated efforts are needed for an earlier and appropriate diagnosis of the disease and also to establish better diagnostic methods, treatment and care.

To summarize, people are easy to reach with ICTs and the system is cost-effective, but qualified nurses or health care workers specialized in Tuberculosis are best suited as care coordinators to assure information delivery and to fight against TB. The organization of TB treatment including the communication between the different stakeholders can still be improved.

References

Ananthakrishnan, R., Muniyandi, M., Jeyaraj, A., Palani, G., & Sathiyasekaran, B. W. C. (2012). Expenditure pattern for TB treatment among patients registered in an urban government DOTSs program in chennai city, south india. Tuberculosis Research and Treatment, 2012, 1-6. doi: 10.1155/2012/747924

Batra, S. (2014, 16 April 2014). Using technology and community empowerment to treat

tuberculosis. Paper presented at the Geneva Health Forum. Global Health: Interconnected Challenges, Integrated Solutions, Geneva

Bundesamt für Gesundheit, BAG. (2012). Nationale Strategie zur Bekämpfung der Tuberkulose (pp. 43). Bern.

Central TB Division, CTBD. (2010). Revised national tuberculosis control programme. DOTSs plus guidelines. In Ministry of Health & Family Welfare Directorate General of Health Services (Ed.), Tuberculosis control in India (pp. 122). New Delhi.

Finfgeld-Connett, D. (2006) Meta-synthesis of caring in nursing. Journal of Clinical Nursing. doi: 10.1111/j.1365-2702.2006.01824.x

Taylor & Francis Online, OECD List of Developing Countries or Territories (2009). Volume 22, Issue 2, p.133, www.tandfonline.com doi: 10.1080/02508069708686691
Revised National Tuberculosis Control Program, RNTCP. (2014). Tuberculosis control - India Retrieved 14 May 2014, 2014, from http://tbcindia.nic.in/home.html

Trivedi, A., Wilson, N., Prasad, S., Chadha, S., Izenberg, M., Kumar, S., Sagili, K. (2013). MTB by front-line workers in a tribal district in India: A pilot study. Paper presented at the 44th World Conference on Lung Health of the International Union Against Tuberculosis and Lung Disease (The Union), Paris, France.
http://www.worldlunghealth.org/conf2013/images/1_Paris2013/Forms/ABSTRACT_BOOK_2013_Web.pdf

Trivedi, A., Wilson, N., Prasad, S., Chadha, S., Izenberg, M., Kumar, S., Sagili, K. (16 April 2014). MTB front-line workers in a tribal district in India: A pilot study. Paper presented at the Geneva Health Forum. Global Health: Interconnected Challenges, Integrated Solutions, Geneva.

World Health Organization, WHO. (2013). Tuberculosis. WHO global tuberculosis report 2013 (pp. 2). Geneva.

World Health Organization, WHO. (2014). Tuberculosis (TB). Retrieved from www.who.int/topics/tuberculosis/en/

***Claudia Dell'Apollonia**: RN, BScN, APN, Emergency Department, University Hospital Zurich, Switzerland, Masters' Student in Nursing Science, University Basel, Switzerland*

***Silvia Grob**: RN, BScN, Nursing Expert, Thoracic and Visceral Surgery Department, University Hospital Basel, Switzerland, Masters' Student in Nursing Science, University*

Basel, Switzerland

***Andrea Müller**: RN, BScN, Quality- and Riskmanager, Hospital Zofingen, Switzerland, Masters' Student in Nursing Science, University Basel, Switzerland*

Kontakt

Deutschschweiz
Medicus Mundi Schweiz
Murbacherstrasse 34
CH-4056 Basel
Tel. +41 61 383 18 10
info@medicusmundi.ch

Suisse romande
Route de Ferney 150
CP 2100
CH-1211 Genève 2
Tél. +41 22 920 08 08
contact@medicusmundi.ch